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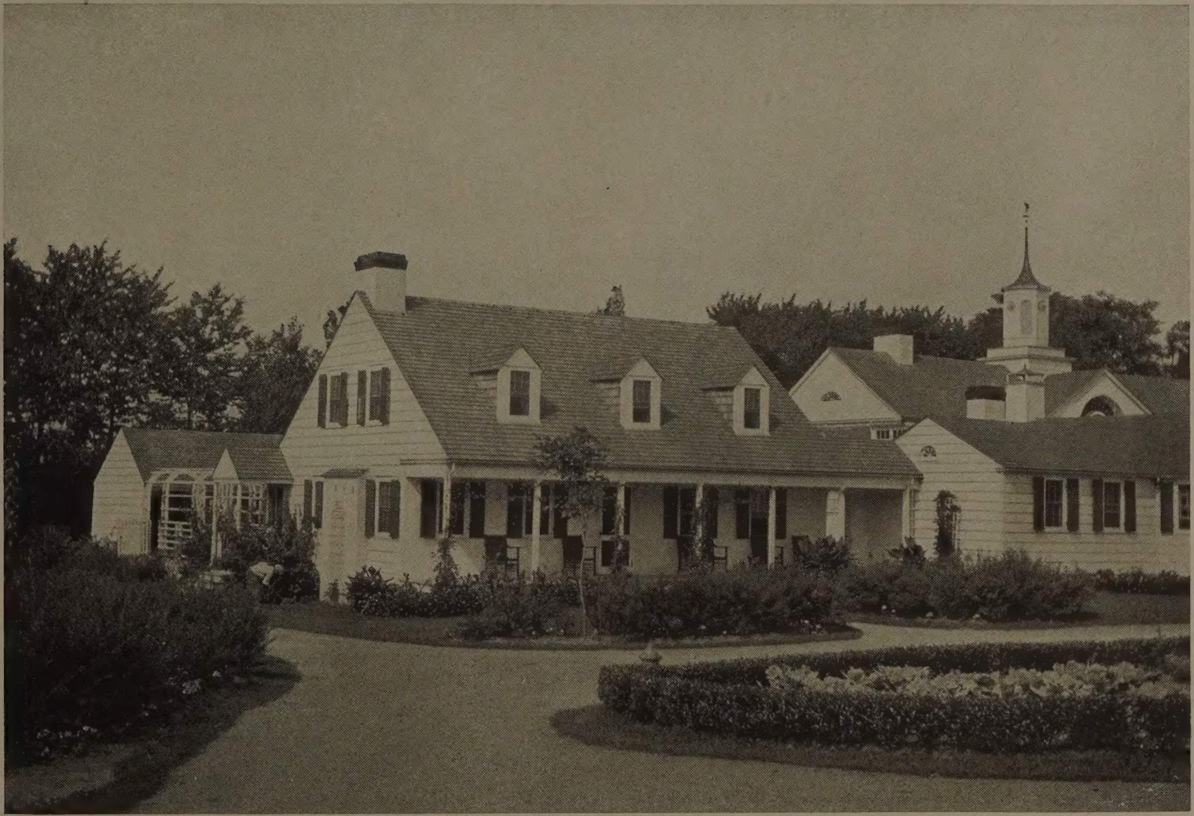

SUPERINTENDENT'S HOUSE, ESTATE OF CLIFFORD V. BROKAW, GLEN COVE, L. I. Alfred Hopkins, Architect.

Farm Buildings—Alfred Hopkins, Architect

By John Warren Spencer

In designing these buildings Mr. Hopkins has faced his problem squarely and seriously. His manner of treating them is of the utmost interest. It has produced a charming result.

THAT beauty of design is independent of cost or that charm can exist without grandeur, is hardly to be disputed as the expression of an abstract fact. But concrete instances substantiating such a statement are so rare, especially in our modern world, that this work of Mr. Hopkins has an interest both timely and forceful. Already this interest has been manifested by the reception that the public accorded the small reproductions of Mr. Hopkins' farm-building work that were published in Architecture several months ago. So greatly admired and appreciated were these few pictures that Architecture now takes pleasure in presenting a more extensive and complete collection, representative of this phase of his work, with a confident feeling that it will be equally well received and enjoyed by its readers. Small houses like these are not often found in the pages of architectural journals. It is there that the large work of the country has right of way by reason of its size, notoriety and expense, to the exclusion of everything else. That is one reason. The other, a more important one, is that there is seldom available small work of sufficient merit to warrant publication, despite the enormous amount of small houses that are built each year everywhere around us. In no branch of our American architecture are the results so discouraging and the prospects so without hope as in the designs of small inexpensive houses. Therefore, it is more than a pleasure, it is with a sense of duty, that these lovely examples of small house design are put forth, in the

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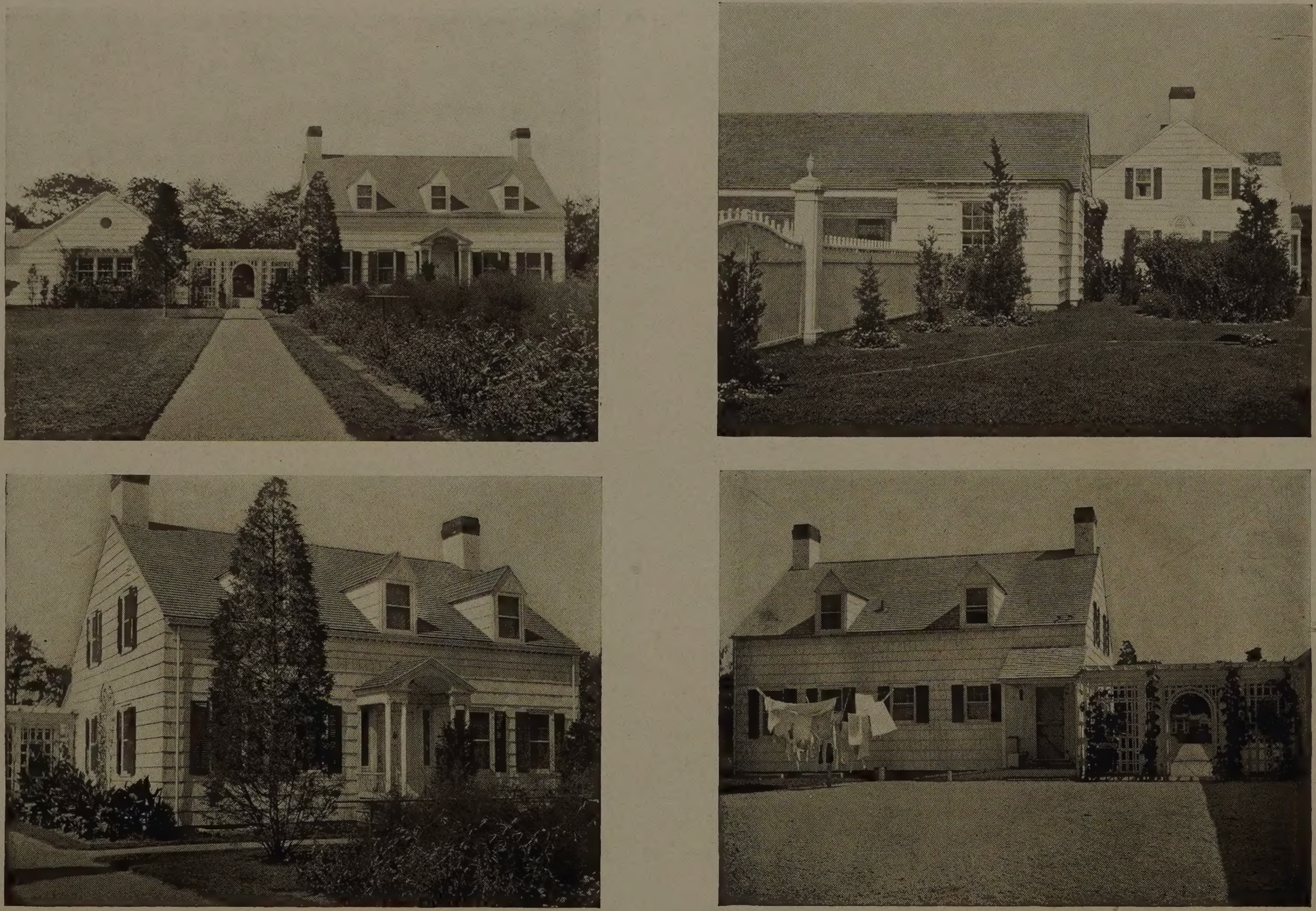
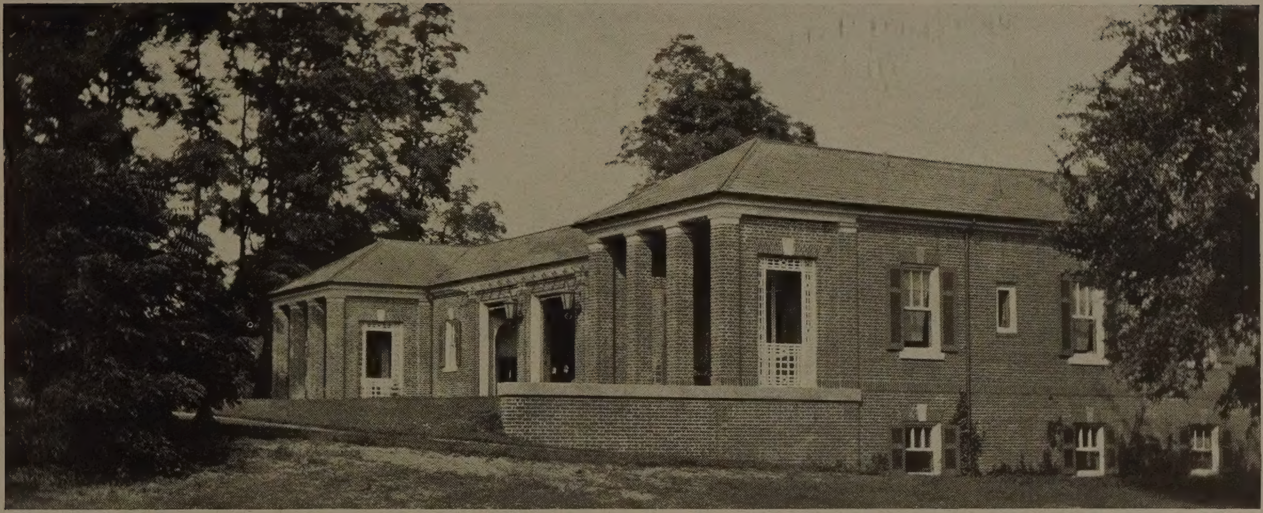
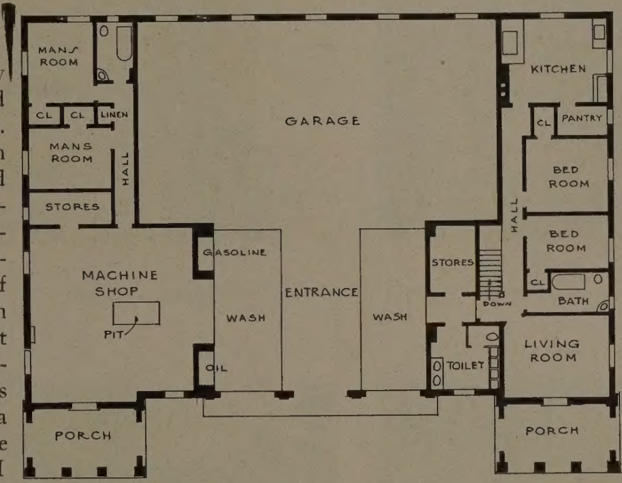


FARM BUILDINGS, ESTATE OF ADOLPH MOLLENHAUER, BAY SHORE, L. I.

Alfred Hopkins, Architect.



GARAGE AND PLAN, ESTATE OF CLIFFORD V. BROKAW, GLEN COVE, L. I. Alfred Hopkins, Architect.



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hope that somehow they may exert a beneficial influence and help raise the standard of design. A trip by rail or motor through any of the farm sections around New York, or indeed almost anywhere through our country, reveals nothing but ugliness, carelessness and a total absence of charm in the architecture. Such a condition is inexcusable, except that it is a reflection of the temperament of the people. One is in the habit of believing that a thing to be desirable must be expensive. In fact, I believe I do not err greatly in saying that here in America the people have a strong tendency to make money the criterion of art. But this is the effect, not the cause of the above mentioned condition. If we are to seek the cause itself, I think it will be found to be that of ignorance—not of the artists—of the architects—but of the public itself. And it is something more than ignorance too. It is a lack of *interest* and of a *desire to learn.* It is because the people who build and dwell in these places have not the sensibility to feel beauty, their natures do not need it, and they cannot realize its worth as something to be desired. This means that there is a very great mission for the art leaders to accomplish in this country. If people are unable to help themselves in their manner of living, then they should be assisted, and it is gratifying that this is being done, to an extent, as is illustrated by the splendid work of improving the living conditions for factory laborers. But the man above the laborer's position, who owns his own home, modest though it be, must help himself principally. And it is because he does not see the importance of doing so that is so discouraging. The usual working person, the one of limited means, is also apt to be the one with a limited outlook on life, because his ambition and best efforts are concentrated on the business of making his living and in accumulating wealth. Thus his commercial instincts are developed and his cultivation for beauty ignored. When he comes to build a house for himself, he is totally unprepared to bring as much to the problem in the way of appreciation for beauty as he should. This fact is not so bad of itself, since all men cannot be artists. But the fact that he does not realize his short-comings is to be regretted. Instead of obtaining an architect and entrusting the work in his superior hands, he will perhaps buy a set of plans for twenty dollars from some cheap builder and be delighted with the bargain, the commercial instinct being uppermost. If these plans are of a well-designed house, very well, he is justified for his joy in the bargain. The point of interest here is that, to the man, it makes not the slightest difference whether it is or not. He has saved the expense of an architect, several hundred dollars perhaps, and that is the important thing to him. The result, with a community of men thinking and acting similarly, is the modern small American country town, devoid of character, devoid of beauty and devoid of charm.

Now such a state is by no means necessary, for if a man does save his architect's fee, that is all; the cost of his house would be the same, whether it is well designed, or badly designed. These small buildings of Mr. Hopkins' illustrate this fact splendidly, because they are simple, inexpensive houses such as any man of limited means might build. The difference between them and the type of house mentioned above is merely the *manner* in which they have been done. The amount of labor and material can be considered equal. For instance, the relation of the width to the height of a dormer window is not dependent on its cost, but its beauty is, for proportion of mass and harmony of line are matters of space and order, not of dollars.

In designing these buildings, Mr. Hopkins has faced his problem squarely and seriously. His manner of treating them is of the utmost interest. It has produced a charming result. A client does not wish to lavish expense on buildings of this type. Primarily they are utilitarian, a means to supply a pleasure—not a pleasure in themselves. Servants, horses, auto-

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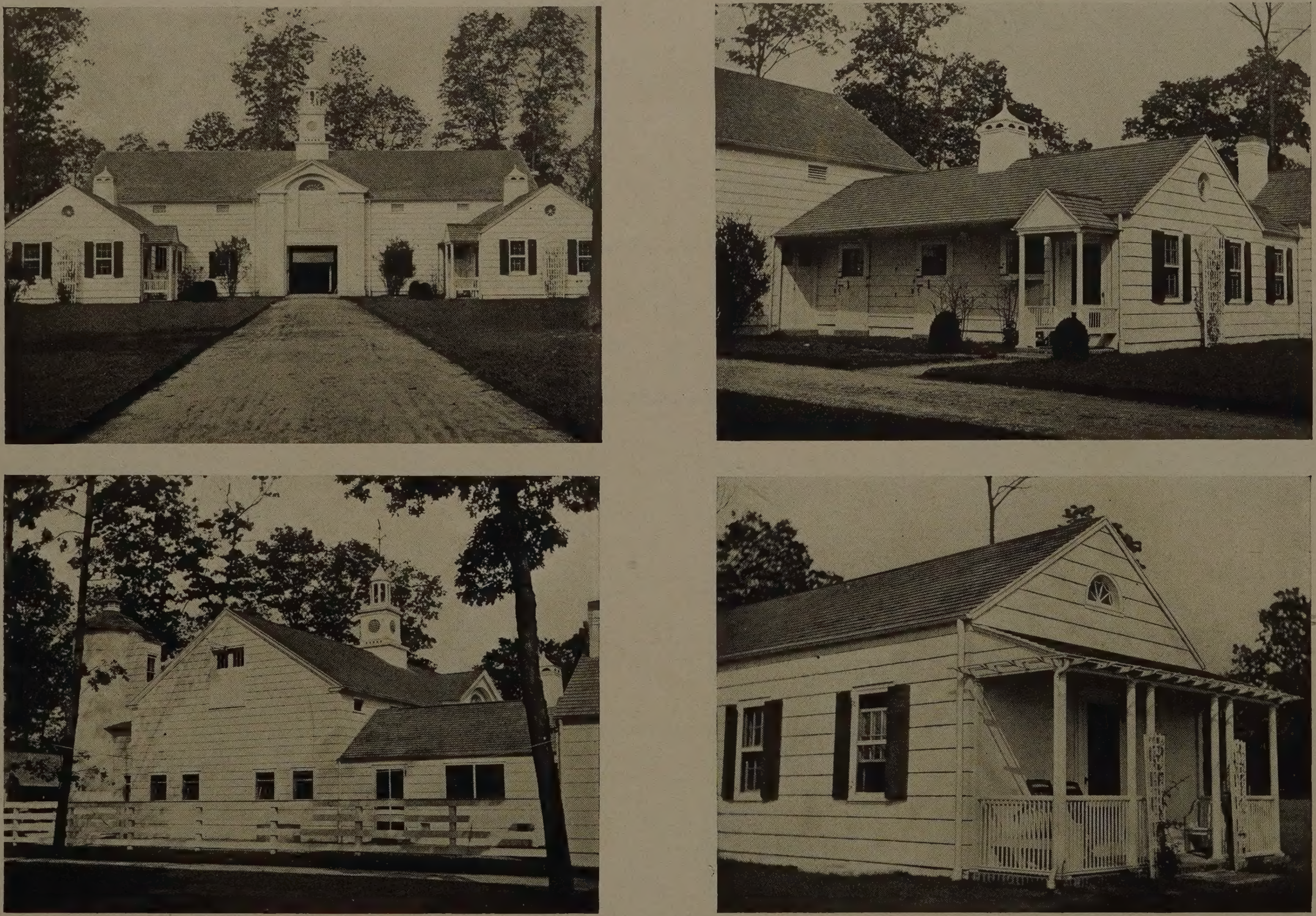
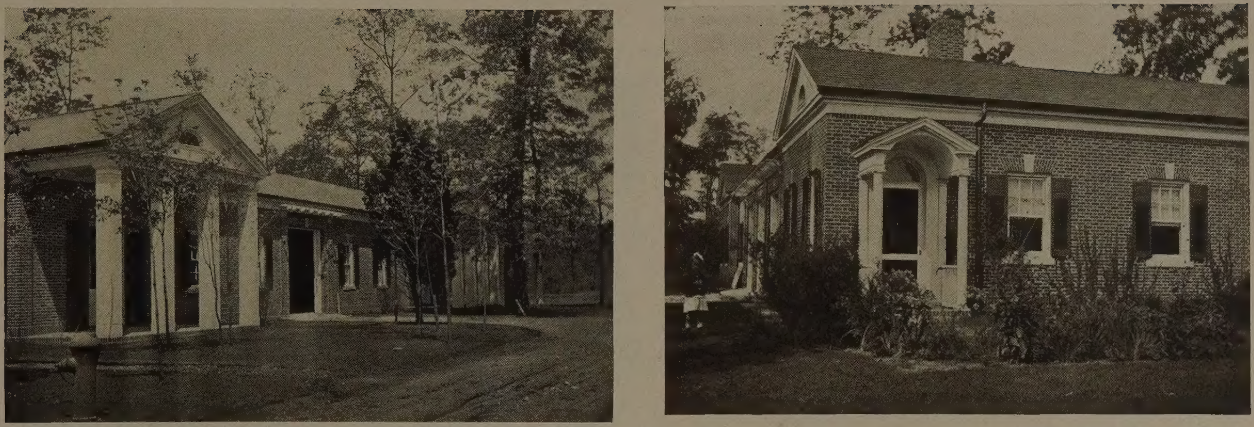
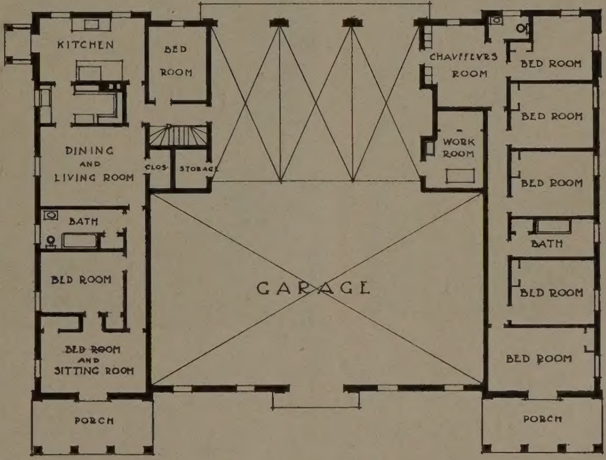


FARM BUILDINGS, ESTATE OF GEORGE S. BREWSTER, BROOKVILLE, L. I.

Alfred Hopkins, Architect.



GARAGE AND PLAN, ESTATE OF GEO. S. BREWSTER, BROOKVILLE, L. I. Alfred Hopkins, Architect.



(*Continued from page 119*)

mobiles are indispensable for comfort in country life. Their living quarters must meet practical conditions and requirements. Every owner of an estate recognizes that, because it is an economic fact. Mr. Hopkins has attracted a large amount of farm-building work because he has specialized in its planning—in knowing the subject thoroughly from a practical point of view, to which he has added an unusual ability for designing. Such ability is rare indeed, for artists as a rule are considered wholly lacking in the practical knowledge of their profession. This belief of the public is so deeply rooted that it is almost regarded as a law. It is true that many men are not big enough, or do not care to direct both branches of their profession, but that a law exists forbidding such a status is absurd and is proven so by Mr. Hopkins' individual work.

The keynote of the aesthetic success of these buildings is their simplicity and their naivete, combined with a distinguished sentiment for proportion. They look as if nothing could be added or taken away without being the worse for it. It would be delightful if all the small houses that now fill our towns and suburbs had been designed in a manner equally well. How much better the people who live in them would look to the world, and how much better the world would look to them.

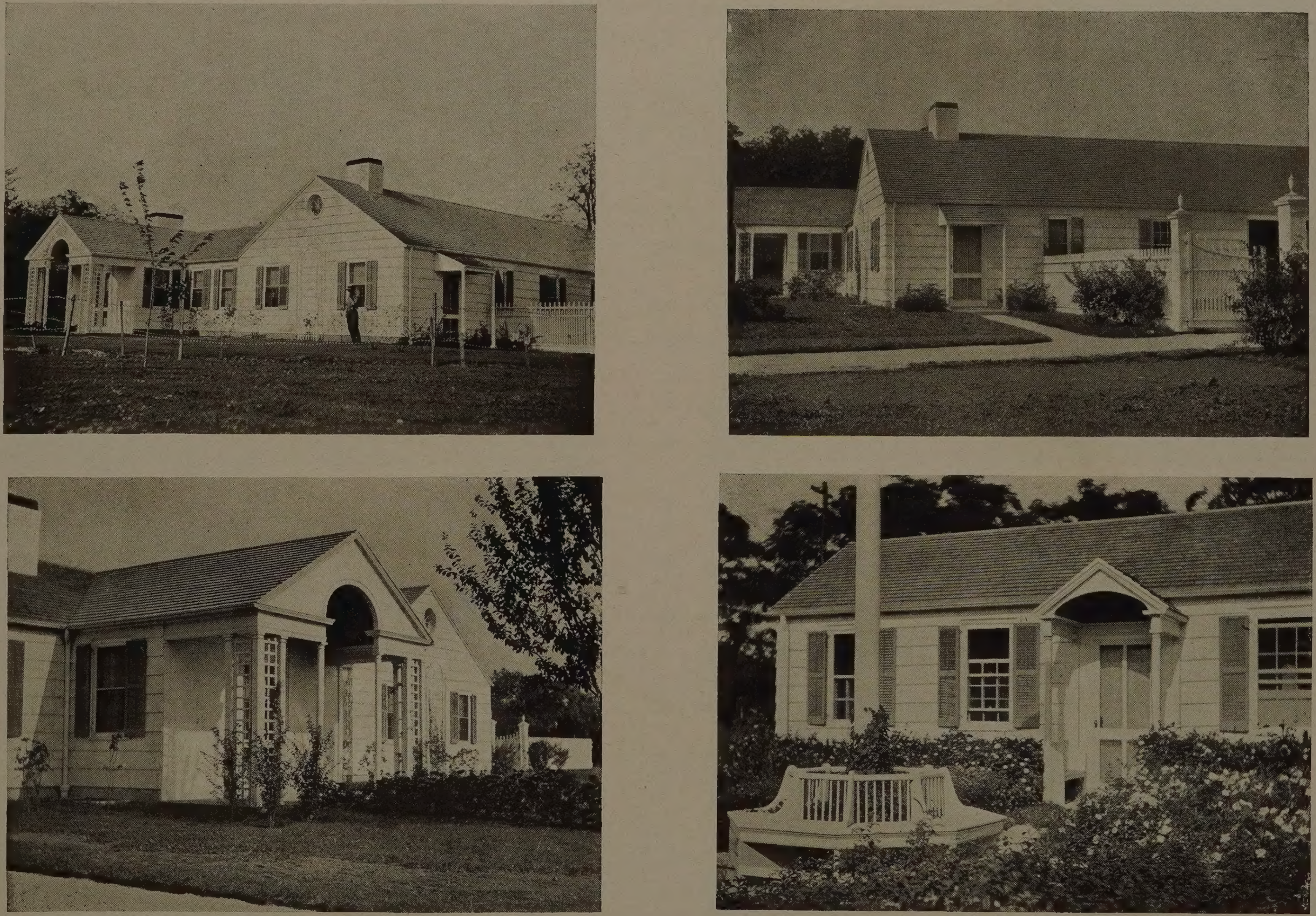
What strikes one most forcibly about these farm buildings and makes them of such valuable and timely interest is their *American* character. For it would be difficult to imagine them existing outside of our own country. *Colonial* architecture is our one and only honest heritage. We borrow the art and architecture of other countries, but Colonial architecture belongs to us. Mr. Hopkins could not have made a happier choice or one more suitable to the purpose of these buildings. Wood is still our cheapest material, and buildings like these must be cheap. The Colonial style alone is suitable to that form of construction. It was born of it in the early days of our nation's history when there was no other building material to be had easily in this country. Its appeal is based on a sentiment inherent in all old Americans.

Mr. Hopkins will be criticised and accused of copying precedent, and for not being more "original." That is purely one's point of view. It cannot be denied that the cry for a new art is very loud throughout the world. But it is beauty we should seek and not novelty. The only sure and lasting way of obtaining that is to develop our art from the good that has preceded us. We have a sound base upon which to build our future national style, in the Colonial, and should be content with it.

These buildings, while obviously designed from old Colonial work, by no means slavishly follow it. The forms may be old, but the *spirit* is distinctly modern, and above all other considerations they are beautiful. Hence, the means of obtaining their effect needs no justification, though that is not absent. Downright copying does not make for progress. On the other hand, a wise use of precedent is highly desirable. These buildings illustrate the point exactly. They may not be original, but they are distinctive and personal.

As farm buildings, they mark a decided advance in that type of design over what we have been doing for the past half century. In purpose they are fundamentally utilitarian. There are evidences that a different point of view is being assumed by the architect, and the owner too. Whether from necessity or not, our modern way is to look upon servants as respectable human beings, desirous of all modern comforts. Economically, to do so is good business, just as, in large manufacturing centers, it has proven profitable to establish pleasant, comfortable living quarters for the laborers. Aesthetically, the presence of beautiful, well-designed outbuildings, properly located in the whole scheme, is an addition to its feeling of unity and to its attractiveness.

Incidentally, the owner in making his service buildings not only comfortable and sanitary, but good to look at as well, performs a valuable service in an altruistic sense. There is no way of learning the value of beauty and how to appreciate it half so good as by living with it. People who thus would not otherwise be able to have attractive surroundings, and who perhaps would not desire them, through ignorance, are placed amid conditions that will be bound to exert a powerful influence on their mental development and that of their descendants.



FARM BUILDINGS, ESTATE OF GLENN STEWART, LOCUST VALLEY, L. I.

Alfred Hopkins, Architect.

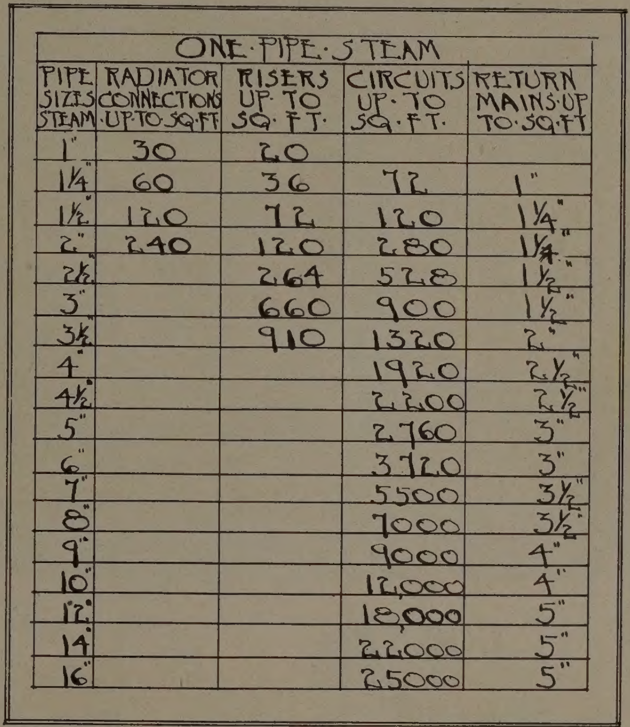
IV. Heating Problems for Architects

By DeWitt Clinton Pond, M. A.

Mr. Pond has charge of the practical course in Architectural Engineering at Columbia University. He is the author of "Engineering for Architects," recently published in book form, the same being a series of articles formerly appearing in ARCHITECTURE.

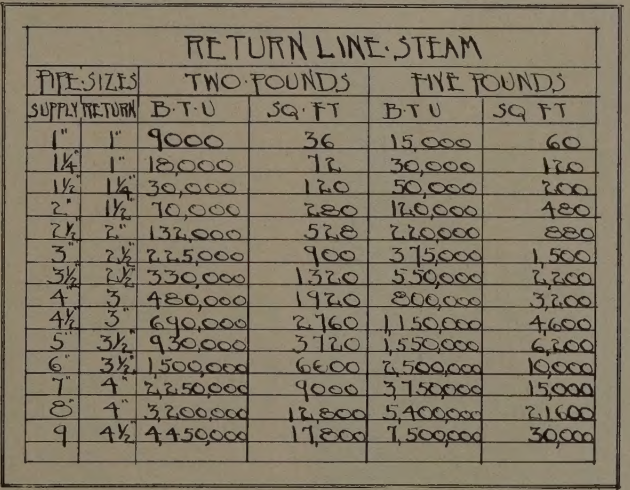
THE problem of piping for steam or hot-water radiators is too often left to a steam fitter who selects the sizes of pipes in much the same manner as a carpenter decides on the sizes of beams—by guess. There is no doubt that thoroughly experienced men, who are supplied with a list of square feet of radiation required for any particular piece of work, can determine with no small amount of accuracy the diameters of pipes necessary to supply steam to radiators, but even these men, unless trained to consider the problem from an engineering point of view, will have difficulties with hot-water piping.

The difference between the two systems is that steam does not circulate through the system as a homogeneous mixture and hot water does. In a steam system the steam is changed into water of condensation and returned to the boiler as such. In a one-pipe steam system there can be no circulation in the same manner as there must be in a two-pipe hot-water system. The steam simply rises throughout all the piping, forcing the air out of the radiators through the air valves, and fills the system. As long as it remains in the form of steam it remains in the radiators. When the temperature falls the steam changes to water and is returned to the boiler by gravity and fresh dry steam takes its place. Because steam is bound to rise throughout the system the need of engineering calculation in determining the pipe sizes is not so important as they are when hot-water heating is considered. Hot water *must* circulate in order to supply heat to the radiators.



ONE·PIPE·STEAM				
PIPE SIZES STEAM	RADIATOR CONNECTIONS ·UP·TO·SQ·FT	RISERS UP·TO SQ·FT·	CIRCUITS UP·TO SQ·FT·	RETURN MAINS·UP TO·SQ·FT
1"	30	20		
1¼"	60	36	72	1"
1½"	120	72	120	1¼"
2"	240	120	280	1¼"
2½"		264	528	1½"
3"		660	900	1½"
3½"		910	1320	2"
4"			1920	2½"
4½"			2200	2½"
5"			2760	3"
6"			3720	3"
7"			5500	3½"
8"			7000	3½"
9"			9000	4"
10"			12,000	4"
12"			18,000	5"
14"			22,000	5"
16"			25000	5"

Table I.



RETURN LINE·STEAM					
PIPE·SIZES		TWO·POUNDS		FIVE POUNDS	
SUPPLY	RETURN	B·T·U	SQ·FT	B·T·U	SQ FT
1"	1"	9000	36	15,000	60
1¼"	1"	18,000	72	30,000	120
1½"	1¼"	30,000	120	50,000	200
2"	1½"	70,000	280	120,000	480
2½"	2"	132,000	528	220,000	880
3"	2½"	225,000	900	375,000	1,500
3½"	2½"	330,000	1320	550,000	2,200
4"	3	480,000	1920	800,000	3,200
4½"	3"	690,000	2760	1,150,000	4,600
5"	3½"	930,000	3720	1,550,000	6,200
6"	3½"	1,500,000	6600	2,500,000	10,000
7"	4"	2,250,000	9000	3,750,000	15,000
8"	4"	3,200,000	12,800	5,400,000	21,600
9	4½"	4,450,000	17,800	7,500,000	30,000

Table II.

It is obviously impossible for water to circulate in an up feed one-pipe hot-water system, and for this reason such a system is never used. But up-feed, one-pipe steam systems are common.

The method of obtaining the sizes of pipes for a one-pipe steam system is simple—provided a table of pipe sizes is at hand. Table I gives the sizes of pipes for a single-pipe system.

In previous articles the method of determining the number of heat units lost through the walls and windows of a room has been taken up. It has also been stated that in order to obtain the number of square feet of radiation necessary to offset this loss the engineer must divide this heat loss by a constant, and this constant was given as 250 when the ordinary steam radiator was considered, and as 170 for the ordinary hot-water-radiator. It was also stated that radiators could be selected by referring to the catalogs of the various manufacturers such as the United States Radiator Corporation, the American Radiator Company, etc.

Having found the number of square feet necessary the next step is to find the piping. Suppose that this system is to be a one-pipe system, then referring to Fig. 9 and to Table I the proper sizes of pipes can be found. Fig. 9 shows the arrangement of risers, radiators and pipes for a single-pipe circuit system, and the number of square feet of radiation each is to supply.

Radiator No. 1 must supply forty square feet of radiation, and so the pipe according to the table must be an inch and a quarter in diameter. This figure for the diameter of the pipe is found in the first column of the table under "Radiator Connections," and for all short connections these figures can be followed.

It will be noticed that radiator No. 2 also has a radiating surface of forty square feet and so there must be an inch and a quarter connection made to it. These two pipes join the circuit and the figures for the diameter of the circuit pipe can be found in the third column. Forty plus forty makes a total of eighty square feet and the circuit pipe that will be big enough to supply steam for this total will be 1½-inch.

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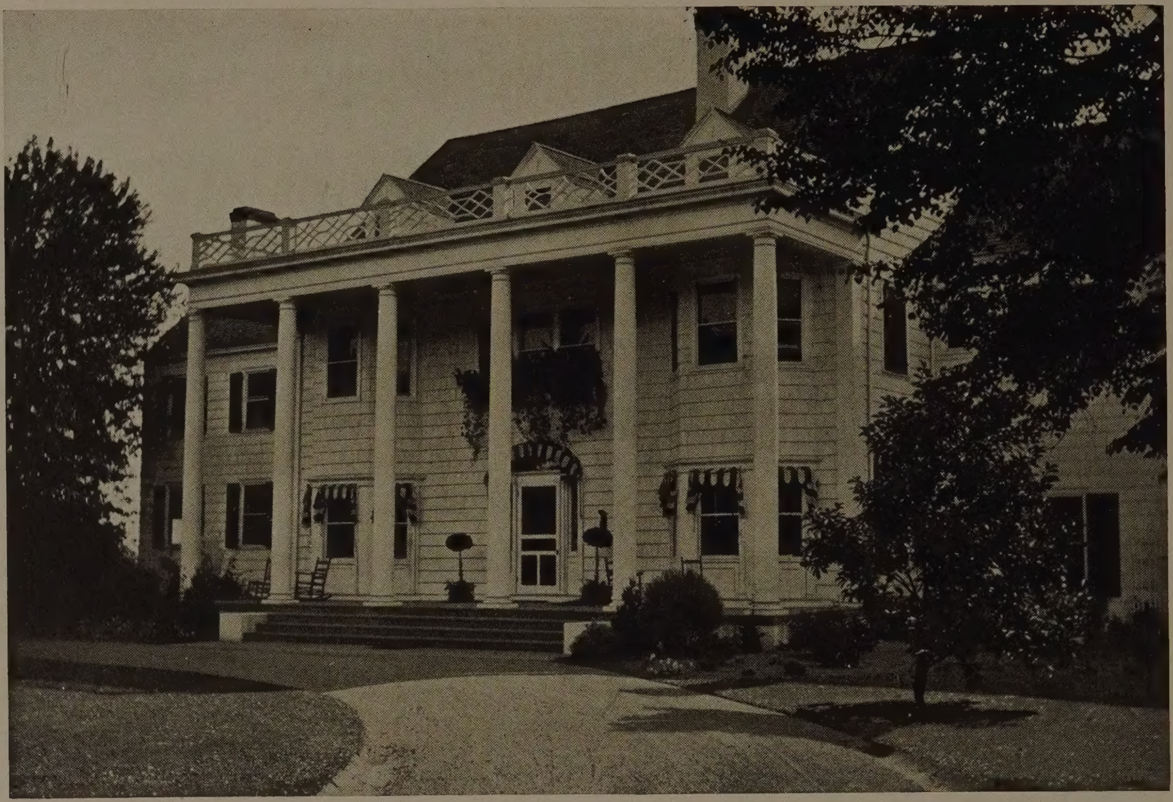
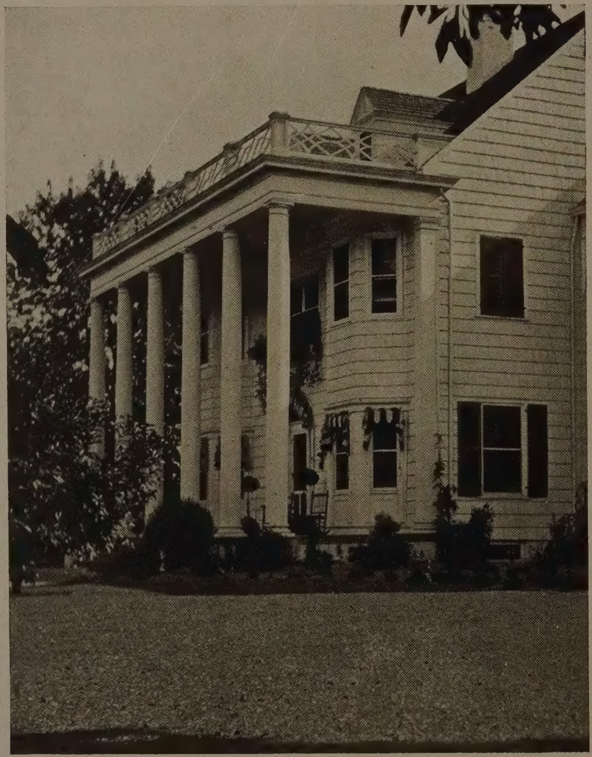
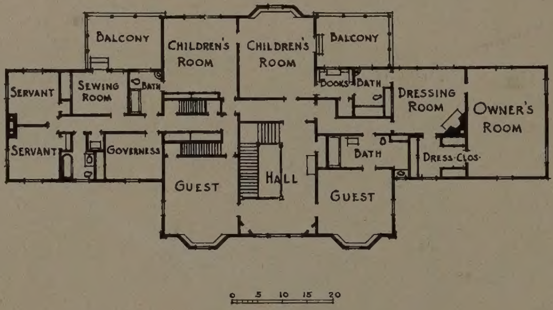
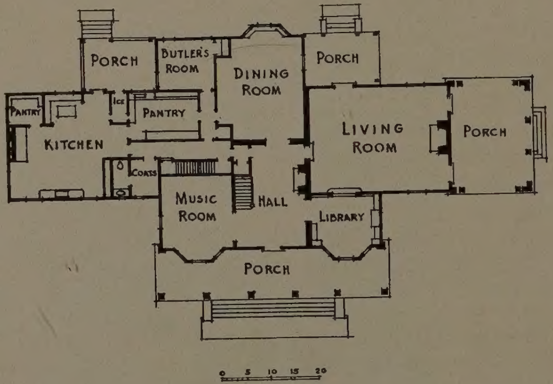








HOUSE AND PLANS, THEODORE BOETTGER, HACKENSACK, N. J.

Alfred Hopkins, Architect.

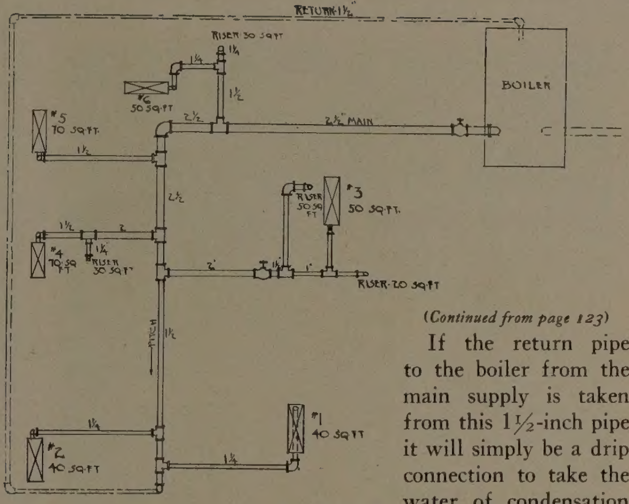


FIGURE 9

(*Continued from page 123*)

If the return pipe to the boiler from the main supply is taken from this 1½-inch pipe it will simply be a drip connection to take the water of condensation from this main to the boiler. The size of this return is found in the last column of the first table, and is governed by the total number of square feet supplied by the circuit. It will be seen that the total number for the circuit shown in Fig. 9 will be 450 square feet. Looking in the last column it will be seen that an inch and a half pipe will be sufficient as a return up to 528 square feet and so this diameter pipe will be selected as the return to the boiler from the main. It might also be pointed out that if a case should arise in which this return should be figured as larger than the smallest pipe found in the return—in this case an inch and a half—the smaller pipe would be selected as it would be foolish to go from small size to the large simply to convey the water of condensation and return steam back to the boiler.

The return pipe is usually brought back as a wet return along the wall of the basement near the floor. If it is possible to take drip connections from the base of the risers to this return it is wise to do so in order to keep the branch lines free from water, but often in one-pipe systems this is not possible and the pitch of the circuit pipes alone are depended upon to carry the water back to the boiler.

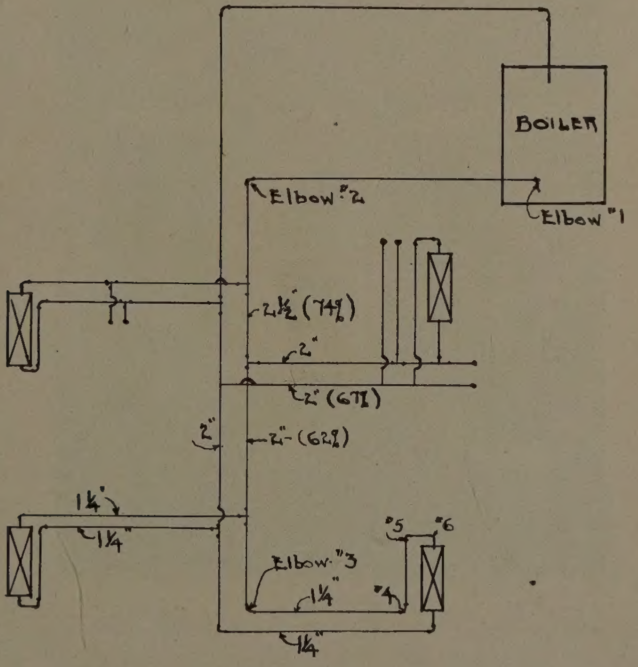


FIGURE · 11

The main is carried along the ceiling of the cellar, and the radiators shown in Fig. 9 are supposed to be on the first floor. The branch lines to them are governed by the sizes shown in the column under "Radiator Connections" but where risers are indicated these sizes are governed by the figures in the third column.

A riser is shown taking steam up to a radiator of 20 square feet radiating surface. This riser must be one inch in diameter.

The next connection is to radiator No. 3, which has a capacity of fifty square feet, and from column one the size of this pipe is found to be 1¼-inch. The addition of twenty and fifty gives a total of seventy square feet and the next size of pipe is found to be 1½-inch. Another riser is brought in which supplies fifty square feet and the size of this riser is an inch and one-half. The size of pipe that supplies steam for the 120 square feet of direct radiation, which is the total for the two risers and radiator No. 3, is found in the table to be 1½-inch.

The total of 120 square feet and 80 square feet is 200 square feet of radiation that have been considered so far and the circuit pipe that will be large enough to supply these radiators with steam will be found in column three to be a two-inch pipe.

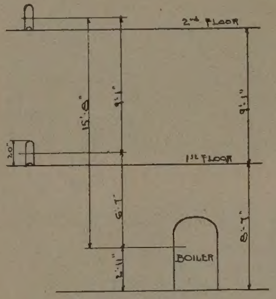


FIGURE 10

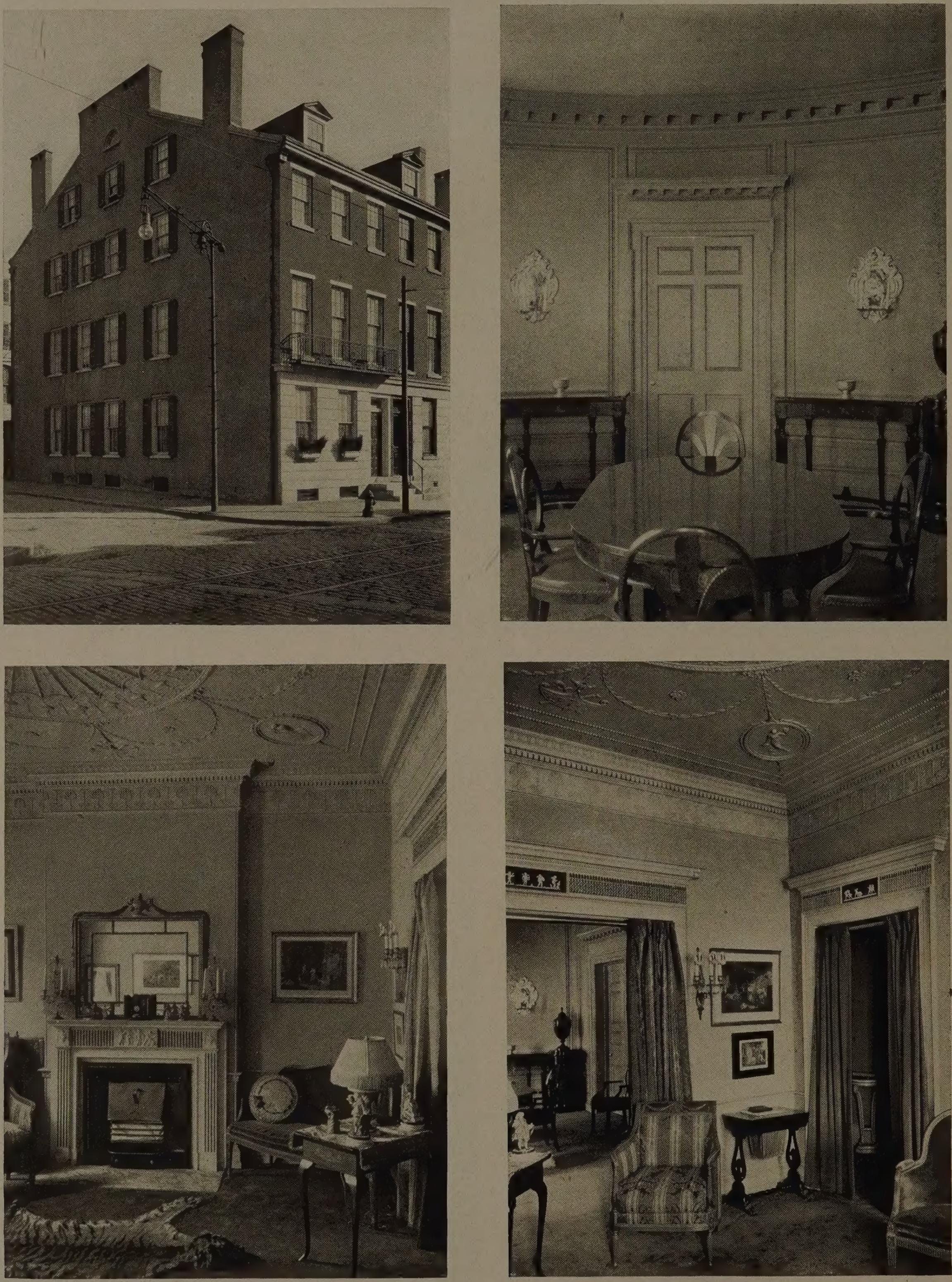
It will be noticed in this table that the risers are larger than the radiator connections and the reason for this is that the risers are usually longer than the radiator connections and that the steam in the risers must encounter the water of condensation which is returning to the boiler in the opposite direction to the rising steam. It will also be noticed that even the radiator connections are larger than the circuit pipes, as the steam and water in the circuit pipes travel in the same direction, whereas the steam and water in the connections travel in opposite directions.

By considering the methods already outlined it will be possible to check the other sizes shown on the drawing.

Table II gives the sizes of pipes to be used when a double return line system is to be installed. Comparing the sizes of the circuit pipes in Table I with the sizes for low pressure steam—two pounds pressure—it will be found that up to 4-inch pipe the two tables are alike.

It will be seen that both steam systems referred to are *closed* systems, that is, they are not open to the atmosphere, and there is pressure in both the return and steam risers. There is one now known as a "vapor" system which is practically an open return line system, although its exponents claim many added advantages for it. The principle upon which both systems work—the open return line and the vapor—is the maintenance of different pressures in the steam and return risers. This is effected by removing the air valves from the radiators and discharging the return steam, the water of condensation, and the air through the return pipe. In the open system the return opens into an expansion tank that is high enough above the water level of the boiler to insure the returns against being filled with water from the boiler, and an outlet is made to the air, so that any steam or air that is in the returns is allowed to

(*Continued page 127*)



EXTERIOR AND INTERIOR DETAILS, HOUSE, EDWARD BROWNING, PHILADELPHIA. Mellor & Meigs, Architects.

SIZE OF PIPE	VERTICAL·DISTANCE·BETWEEN·CENTER·OF·BOILER·AND·HEATING SURFACE											
	5	10	15	20	25	30	35	40	45	50	60	70
⅜"	910	1,280	1,570	1,820	2,040	2,240	2,420	2,590	2,750	2,900	3,180	3,450
½"	1750	2,480	3,030	3,510	3,930	4,300	4,640	4,960	5,260	5,540	6,080	6,600
¾"	4,500	6,400	7,800	9,050	10,200	11,200	12,100	12,900	13,600	14,250	15,500	16,700
1"	9,000	12,700	15,600	18,100	20,300	22,300	27,100	25,800	27,400	28,900	31,700	34,400
1¼"	16,800	23,800	29,000	33,500	37,500	41,000	44,200	47,200	50,000	52,700	57,900	62,900
1½"	25,600	36,400	44,500	51,400	57,500	63,000	68,000	72,600	76,900	80,900	88,400	95,400
2"	53,000	75,000	91,500	106,000	119,000	130,500	141,000	150,500	159,500	168,000	184,000	199,000
2½"	102,000	145,000	176,000	204000	228,000	250,000	270,000	288,000	304000	320,000	351,000	381,000

AREA	SIZE OF·PIPE														
78.5	10"	1.0													
63.7	9"	.77	9"												
50.2	8"	.57	.74	8"											
38.5	7"	.41	.54	.71	7"										
28.3	6"	.27	.35	.47	.67	6"									
19.6	5"	.17	.23	.31	.42	.63	5"								
15.9	4½"	.13	.17	.23	.32	.47	.77	4½"							
12.6	4"	.10	.13	.17	.23	.35	.57	.74	4"						
9.6	3½"	.07	,09	.12	.17	.26	.41	.54	.72	3½"					
7.1	3"	.048	.06	.08	.11	.17	.27	.35	.47	.67	3"				
4.9	2½"	.030	.037	.05	.07	.11	.17	.23	.31	.42	.63	2½"			
3.1	2"	.018	.023	.03	04	.06	.10	.13	.17	.23	.35	.57	2"		
1.8	1½"	009	.011	.014	02	.03	.048	.06	.08	.11	.17	.27	.47	1½"	
1.2	1¼"	.005	.006	.008	.012	.018	.03	.037	.05	.07	.11	.17	.31	.63	1¼"
.7	1"	.003	.004	.006	.008	.011	.018	.023	.03	.04	.06	.10	.17	.35	.57

Table III.

(*Continued from page 127*)

escape at atmospheric pressure. In the vapor system the steam and water return to the boiler directly through the return pipes but the air is expelled at a point near the boiler through patented air valves which allow the air to escape until the steam comes in contact with the mechanism of the valve, but which will not allow the air to return back into the system once it is expelled. This action of the valve practically causes a vacuum which *draws* the steam through the system in much the same manner as a real vacuum system acts.

It depends upon the particular type of trap or valve placed upon the discharging end of the radiator whether there will be any steam in the returns or not. If a float valve is used there will be steam in the returns; if the diaphragm is used the valve will close as soon as the steam comes in contact with it and there will be no steam in the returns. This at once creates a difference in pressure between the steam and the return risers and causes a positive circulation. The difficulty with the vapor system is that the air valve may not work and the vacuum that it is supposed to create will not exist. In this case there is apt to be trouble with the *positive* circulation.

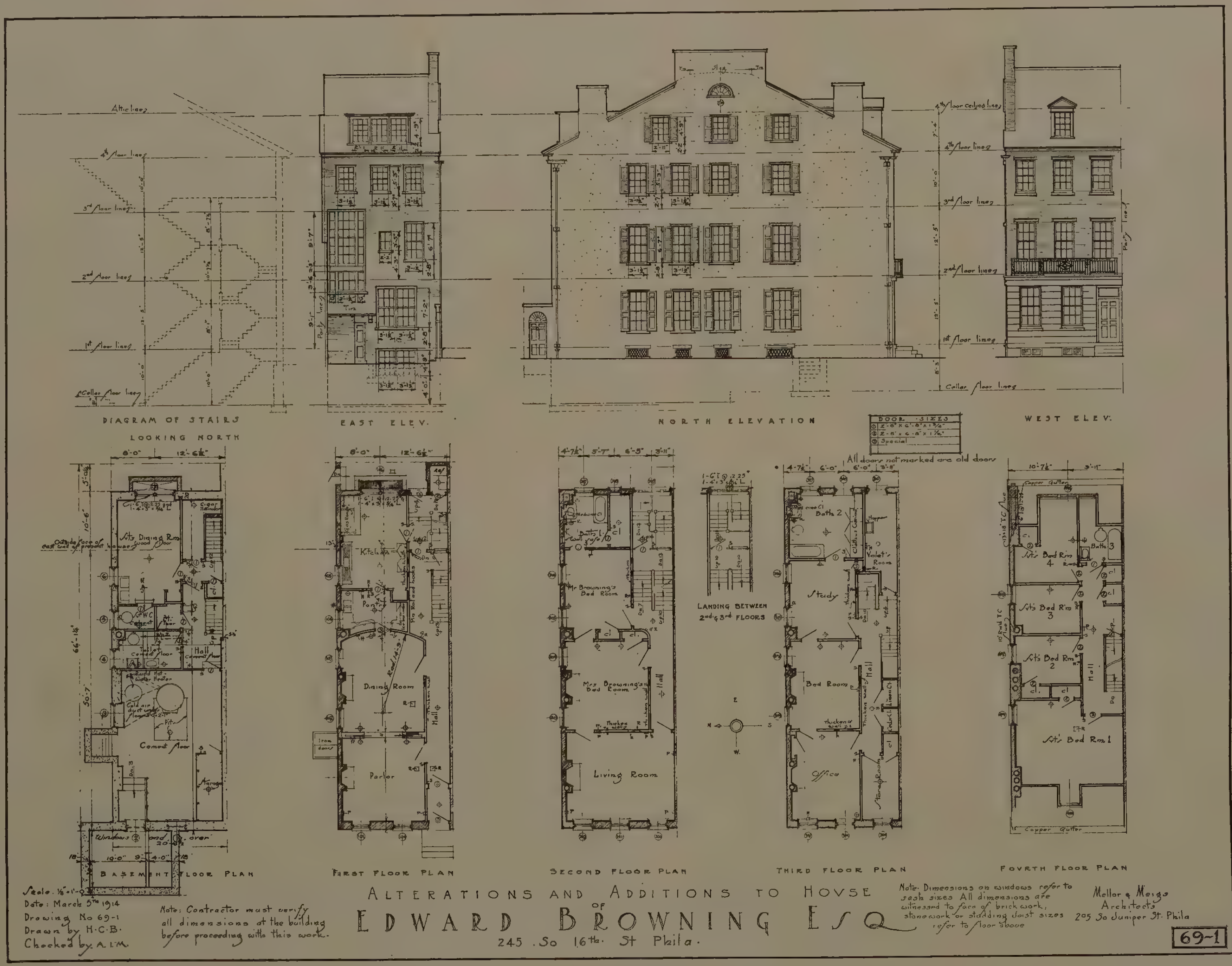
An added advantage, aside from the positive element of these systems, is that it is possible to regulate the amount of steam in the radiators at the radiator valves themselves. In the closed system, there being pressure in both the return and steam risers, if steam is partly turned off at one valve it will enter the radiator through the other. This is not the case in the open return line or vapor systems. There being no pressure in the return pipes of the open system, a possible vacuum in the returns of the vapor system, and at the most only a slight pressure, there will be no steam flowing back into the radiator. It is possible to open the inlet valve only part way and fill the radiator partially with steam.

The piping for these systems is practically the same as for the closed return system except the returns are smaller in some cases as they are simply drip connections.

Hot-water piping offers new difficulties that are not always appreciated. As stated at the beginning of the article hot-water *must* circulate in order to supply heat to the radiators. It is a homogeneous mixture, filling the entire system, and unless it is kept in active circulation does not conduct heat.

The "head" that produces this circulation is very slight,

(*Continued page 129*)


Attic lines
4th floor lines
3rd floor lines
2nd floor lines
1st floor lines
Cellar floor lines
DIAGRAM OF STAIRS
LOOKING NORTH
EAST ELEV.
NORTH ELEVATION
4th floor ceiling lines
WEST ELEV.
DOOR SIZES
① 2'-8" x 6'-8" x 1¾"
② 2'-8" x 6'-8" x 1⅝"
③ Special
All doors not marked are old doors
Copper Gutter
Sit's Dining Rm
Hall
Cement floor
Cement floor
Kitchen
Pantry
Dining Room
Parlor
Mr Browning's Bed Room
Mrs Browning's Bed Room
Living Room
LANDING BETWEEN 2nd & 3rd FLOORS
N
E
S
W
Bath 2
Valet's Room
Study
Bed Room
Office
Hall
Sit's Bed Rm 4
Bath 3
Sit's Bed Rm 3
Sit's Bed Rm 2
Sit's Bed Rm 1
BASEMENT FLOOR PLAN
FIRST FLOOR PLAN
SECOND FLOOR PLAN
THIRD FLOOR PLAN
FOVRTH FLOOR PLAN
Scale: ⅛"=1'-0
Date: March 5th 1914
Drawing No 69-1
Drawn by H.C.B.
Checked by A.I.M.
Note: Contractor must verify all dimensions at the building before proceeding with this work.
ALTERATIONS AND ADDITIONS TO HOVSE OF
EDWARD BROWNING ESQ
245 So 16th St Phila.
Note: Dimensions on windows refer to sash sizes All dimensions are witnessed to face of brick work, stonework or studding Joist sizes refer to floor above
Mellor & Meigs Architects 205 So Juniper St. Phila
69-1

(Continued from page 127)

depending upon the difference of weight between water at 180 and 150 degrees temperature. For this reason every means possible must be used to help the water to have a free passage through the system. It is obvious that bends and horizontal runs will cause friction that will tend to retard the circulation and for this reason they must be taken into account.

In Table III it will be seen that the vertical distances between the radiators and the centre line of the boiler is taken into account. Aside from this there must also enter into the calculation the number of bends, and this item is taken care of by adding five per cent. to the number of B. T. U. for every two bends in the pipe. Added to this there must be five per cent. for each ten feet of horizontal run. This may seem complicated but an example may make it clearer.

Suppose radiator No. 1, in Fig. 11, has to supply 11,200 British Thermal Units, and, as seen in Fig. 10, it is located so that the center of the radiator is 6 feet, 7 inches above the center of the boiler. By scaling the horizontal distance along the pipe from the boiler to the radiator it is found that there are 54 feet of horizontal pipe. This means that there must be 6 × 5 = 30 per cent. added to 11,200 on account of the horizontal pipe.

The next step is the consideration of the number of elbows in the pipe. Referring to Fig. 11, it will be seen that there is the first one as the main turns away from the boiler; the second is found at the point where the main turns at right angles toward radiator No. 1; the third is at the point at the end of the main where the branch turns off to radiator No. 1; the fourth elbow is found where the branch turns under the radiator, and the fifth and sixth where it turns up and into the radiator. In other words, there are six elbows in this piping. For every pair of elbows there is five per cent. added, or 3 × 5 = 15 per cent.

Thirty per cent. plus 15 per cent. gives a total of 45 per cent. to be added to 11,200 B. T. U., or 11,200 × 1.45 = 16,300.

The height of the radiator can be taken as about five feet, and referring to the table it will be found that 1¼-inch pipe will be large enough. Because the tables are for heights of five, ten, fifteen, etc. feet it will be necessary for the architect to interpolate to a certain extent.

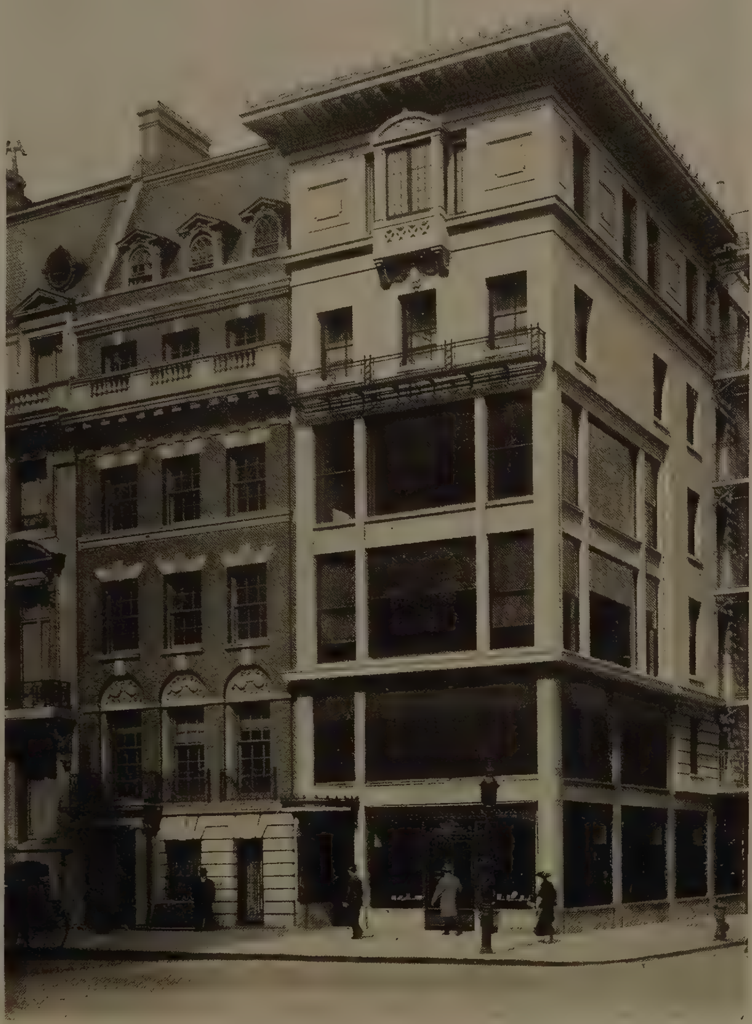
For radiators on the second floor the vertical height of 15 feet, 8 inches is used. Suppose the riser near radiator No. 3 supplies 5,000 B. T. U., that the horizontal run of pipe is 45 feet, and that there are ten elbows. The problem then resolves itself into multiplying 5,000 by 1.50 and the result, 7,500, found in the column under 15 feet, will call for a three-quarter-inch pipe.

The last step is to determine the sizes of pipes in the branch and circuit pipes. The return and supply pipes are made the same sizes and the number of elbows is taken from the one—supply or return—which has the most elbows. Radiators one and two are both supplied by 1¼-inch pipes. In table three the percentage of areas of different diameter pipes are given. For example, looking down the column under "Size of Pipe" a one-inch diameter is found. Following to right a figure .51 is found and this indicates that a one-inch pipe is 51 per cent. of an inch and a quarter pipe. It will also be found that an inch and a quarter pipe is 63 per cent. of an inch and a half pipe. If this is the case two 1¼-inch pipes will have an area of 1.26 per cent. of an inch and a half pipe and, of course, this shows that it will be impossible to turn two 1¼-inch pipes into one 1½-inch pipe.

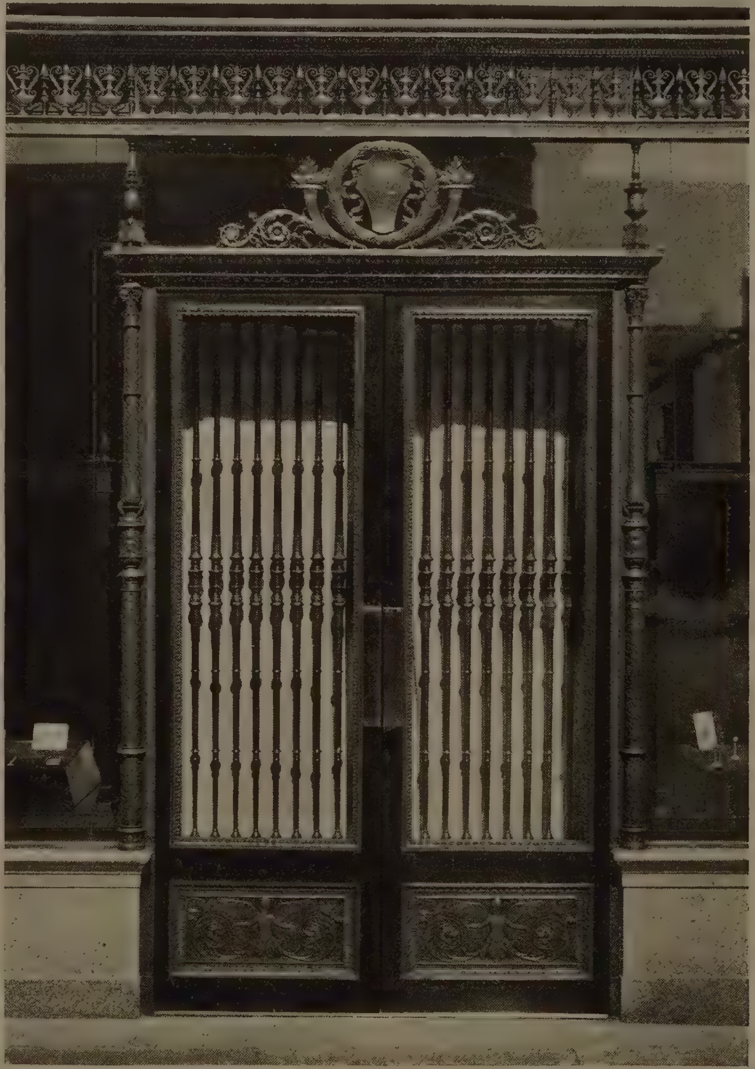
On the other hand, it will be found that 1¼-inch pipes have a sectional area equal to 31 per cent. of two-inch pipes and that two 1¼-inch pipes will have a combined sectional area of 62 per cent. of a 2-inch pipe. It is possible to bring the two 1¼-inch pipes to the 2-inch pipe as shown. The 2-inch branch line to radiator No. 3 enters the main and this carries only 67 per cent. of its capacity. Adding 63 and 67, the total 1.29 shows that if these two 2-inch pipes were joined to another 2-inch pipe the last pipe would be over-loaded 29 per cent.

To find the capacity to which these two pipes will fill a 2½-inch pipe, look in the table and find the percentage that a 2-inch pipe will bear to a 2½-inch pipe—57 per cent.—and multiply this by 1.29. 1.29 × 57 = 74 per cent.

This method is followed out to find all the sizes of pipes for the system and the architect can check the results as given in the figure.



Exterior. Townsend, Steinle & Haskell and Berlinger & Moscowitz, Architects.



Bronze Doors, Store, T. Kirkpatrick & Co. Berlinger & Moscowitz, Architects.

MARCEAU BUILDING, 624 FIFTH AVF., NEW YORK.

The Fee-Plus-Cost System of Charging for Professional Services

By William Stanley Parker in the Journal A. I. A.

A. THE PERCENTAGE SYSTEM

The system of charging a certain percentage of the final cost of the work for the architect's services has become a firmly established custom. The strongest reason for this is that, by establishing a customary percentage, competition between architects on a basis of size of fee can be eliminated and this must continue to be eliminated so that professional qualifications may alone form the basis of comparison.

As a matter of fact this appears to be about the only legitimate reason for the creation of such a system, the other reasons that now exist being the result of the system, not precedent to it; as, for instance, the reasons most often given by an architect being that he has always used it and that other architects generally use it and therefore that owners are familiar with it and that it is recognized in the courts, in other words that it is *customary*.

B. DEFECTS IN PERCENTAGE SYSTEM

There are many defects, however, that are inherent in such a system of charging for the professional services of an architect.

A customary percentage for all architects assumes an equality of professional ability which obviously does not exist. In addition to this, the net profit which it is intended shall accrue to the architect for his professional service is dependent on many elements in the work over which he has little or no control, and which vary according to the work and the personality of the owner.

The variation in draughting costs can be very great and can easily eat up most, if not all, of the contemplated profit. Architects often confess to doing residences at 6 per cent, at a loss, making up for it by profits on commercial work. This, of course, is not a business proposition. Each client should pay the legitimate expenses connected with his work and a reasonable profit for the personal services of the architect.

To a certain extent changes are made during the progress of any work. Frequently these are aggravated in number and in resulting expense to the architect, solely as the result of the client's attitude toward the work and yet without exceeding the legitimate duties of the architect. In such cases, the burden of personal service of the architect is increased and his profit is not increased but is steadily reduced, not only through increased draughting cost but in many cases because the change is made to reduce the cost of the work and this automatically reduces the compensation.

C. RECOGNITION OF THE DEFECTS

Architects recognize and partially correct these defects in the system by charging different percentages for different types of work. In determining these different percentages the architect must consider the varying amount of personal service involved and the probable average cost of draughting required in the different types of work, and then set percentages that will be generally adequate. He may, for instance, have three different rates, one for lofts, warehouses, and similar buildings, one for miscellaneous public and private work, and one for residences; or he may have other classifications to suit his own practice.

D. FEE-PLUS-COST SYSTEM

A system under which the architect charges a professional fee for his personal service, and in addition charges his various expenses at cost, is growing in favor as it is both logical and flexible. When the study of a problem is started, an agreement is reached with the owner by which the architect is to receive a definite, guaranteed sum as his professional fee. Since this is guaranteed, it can reasonably be reduced to a minimum. The draughting and other expenses being charged at cost, the expense of all changes in the drawings is automatically taken care of. An owner who makes few changes will have a correspondingly small draughting charge to pay, and vice versa. The owner may fear that the draughting will not be done economically and his expense be thereby increased; but, if the owner is willing to trust his architect to administer the expenditure of say $100,000 for the material and labor on the work, surely he should be willing to trust the architect to administer the expenditure of from one per cent. to two per cent. of that amount in draughting. Moreover, if the architect's personal profit is independent of the cost of the work, the owner may well feel easier about the disinterested administration of his funds. While it is by no means a fact that architects deliberately "pad" the cost of the building by use of unduly expensive materials or methods, still under the percentage system they do benefit by such use and it is not to be wondered at if they, to a greater or less extent, adopt an attitude of passive acquiescence in expenses suggested by the owner or thoughtlessly included in the development of the problem. With his professional fee guaranteed, the architect is stimulated to devote his best endeavor to the interests of his client, whether it be in an effort to reduce the cost of the work, which an owner generally desires, or to perfect details of equipment. Also the owner does not have the somewhat galling reflection, when trouble occurs and extras are incurred, that he is paying the architect a commission on what he may consider to be the architect's mistakes.

It is generally acknowledged that the more complete the plans, the lower the estimates will be. Under the percentage system this economy in estimates must be obtained at an expense in draughting that reduces the element of profit to the architect. Under the "Fee-Plus-Cost" System the architect is free to make the complete drawings that the work warrants at the expense of the client, who is repaid for this expense in a logical way, by the reduction in the estimates.

In any event, under the percentage system, there are a number of items of expense that are customarily charged at cost, such as engineers' fees, clerk-of-the-works and incidental expenses. The "Fee-Plus-Cost" System merely goes one step further and adds at cost the expenses of draughting and overhead in the architect's office, and then adds to the total of these various items of cost a fixed item for professional fee.

It will be readily seen how adaptable this system is to all classes and conditions of service. A piece of work can be analyzed fairly accurately at the start, as to the degree of personal service involved, and a sum named as a fee that is mutually satisfactory, without any regard to the variable ele-

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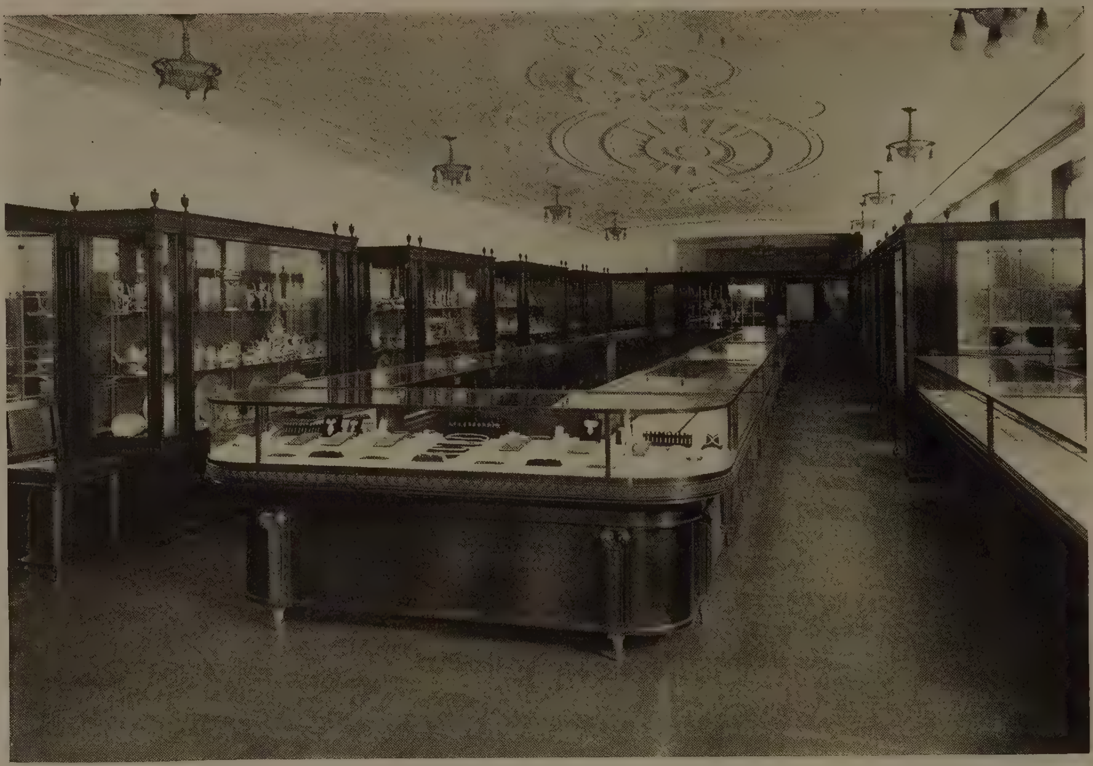
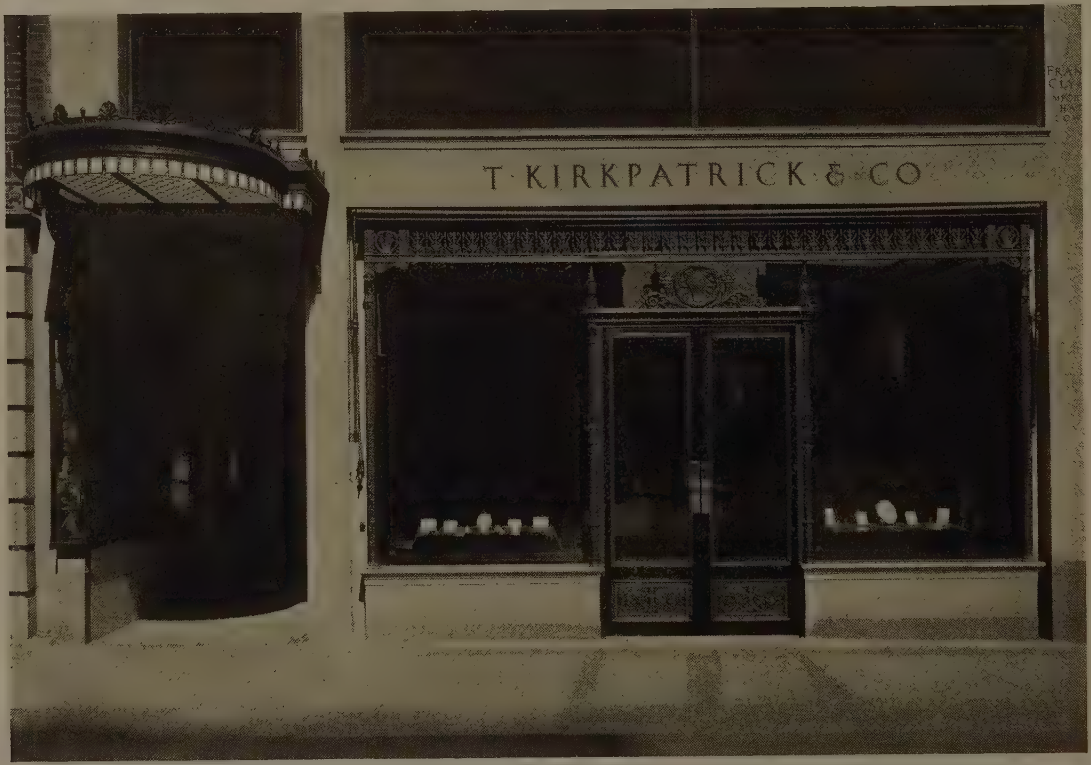


Interior Store, T. Kirkpatrick & Co.

Berlinger & Moscowitz, Architects.



Store Front, T. Kirkpatrick & Co.

Berlinger & Moscowitz, Architects.

MARCEAU BUILDING, 624 FIFTH AVE., NEW YORK.

(Continued from page 131)

ments of expense involved in such service. These elements of expense, just as the larger item of actual cost of the work, can be estimated and reported upon for the information of the owner; but there is no reason why the architect should guarantee what the draughting will cost, any more than he should guarantee what the buildinig itself will cost.

The adaptability of the system to the work of public, private, and corporate owners has been demonstrated in actual practice for ten years.

E. DETERMINATION OF FEE

Just as an average commission on the percentage basis is said to be 6 per cent, so an average fee on the "Fee-Plus-Cost" System might be said to be 3 per cent. It is fairly generally established that an architect's expenses on all classes of work will average half his commission, that frequently they will exceed it, and that if they are less than half it is looked upon as a piece of good fortune. In certain types of work, however, the expenses will be regularly less and in others regularly more than half the commission.

The fee, however, should be determined directly by the personal service required, and not indirectly by the incidental elements of cost involved in performing the service.

In determining the fee, therefore, for each piece of work, the architect should consider the intensity of personal service required of him, the length of time during which such service is to be rendered, and the responsibility involved in such service, which last element has a certain relation to the financial investment involved in the undertaking of the owner. The sort of service demanded in connection with a large private residence will manifestly be greater, in proportion to the expenditure involved, than that in connection with a warehouse.

Each architect must adopt his own individual scale by which to determine his fees, but it may reasonably be considered that 3 per cent. of the cost of the work will represent a mean, the fee being greater or less than 3 per cent. according to the demands of the service to be rendered, and always taking into consideration also, that the amount of the fee is guaranteed and need not be increased to take care of any uncertain expense item, as in the percentage system, but rather can be reduced to the reasonable minimum.

It is also to be constantly borne in mind that while the fee has been determined in connection with an estimated cost of the work, it is not to be affected by any difference between this estimate and the actual *final* cost of the work. If the *scope* of the work is changed so as materially to increase or diminish the intensity, duration, or responsibility of service, then the agreement with the owner should be modified to fit the new conditions. If the conditions of service remain unchanged, the fee remains unaffected by the actual final cost of the work.

F. DRAUGHTING

The cost of the draughting, that is the net cost of the salaries of draughtsmen engaged on a piece of work, will vary according to office organization as well as according to the character of the work. It can only be estimated by each architect for himself in the light of his own experience. It will probably be found to average from 1 per cent. to 2 per cent., with exceptions both above and below these averages.

Charges for draughting by the architect himself should not be made under this item. The fee is for the personal service of the architect. If it is his custom to do a considerable amount of draughting, or if a particular piece of work will involve an unusual amount of his own time for original design or detailing, the fee should be accordingly increased. It is not proper under this system for the architect to obtain profit otherwise than from his professional fee.

The cost of draughting should include the cost of writing specifications and also the cost of inspection by members of the office force other than the architect himself.

G. COSTS

There are two kinds of cost-items, in addition to draughting, connected with the expenses of an architect's office:

(1.) Those items easily chargeable directly to a particular piece of work, such as travel, long-distance telephoning, blue-printing, models, engineers, or clerk of works. These should be so charged.

(2.) Overhead costs not easily apportioned:

These overhead costs, such as rent, light, heat, stenography, supplies, and postage, have a certain logical relation to the total cost of draughtsmen's salaries, which relation will differ in different offices, but in each will remain fairly constant. Each office should determine this relation and in charging the draughting to each job, add a fixed percentage to cover the overhead charges. In an average office, the overhead charges will probably approximate 100 per cent. of the draughting. If the architect as a general rule does most of his draughting himself, under the item of professional fee, as noted above, the overhead charges may very likely be more than the cost of the remaining draughting.

H. RENDERING OF ACCOUNTS

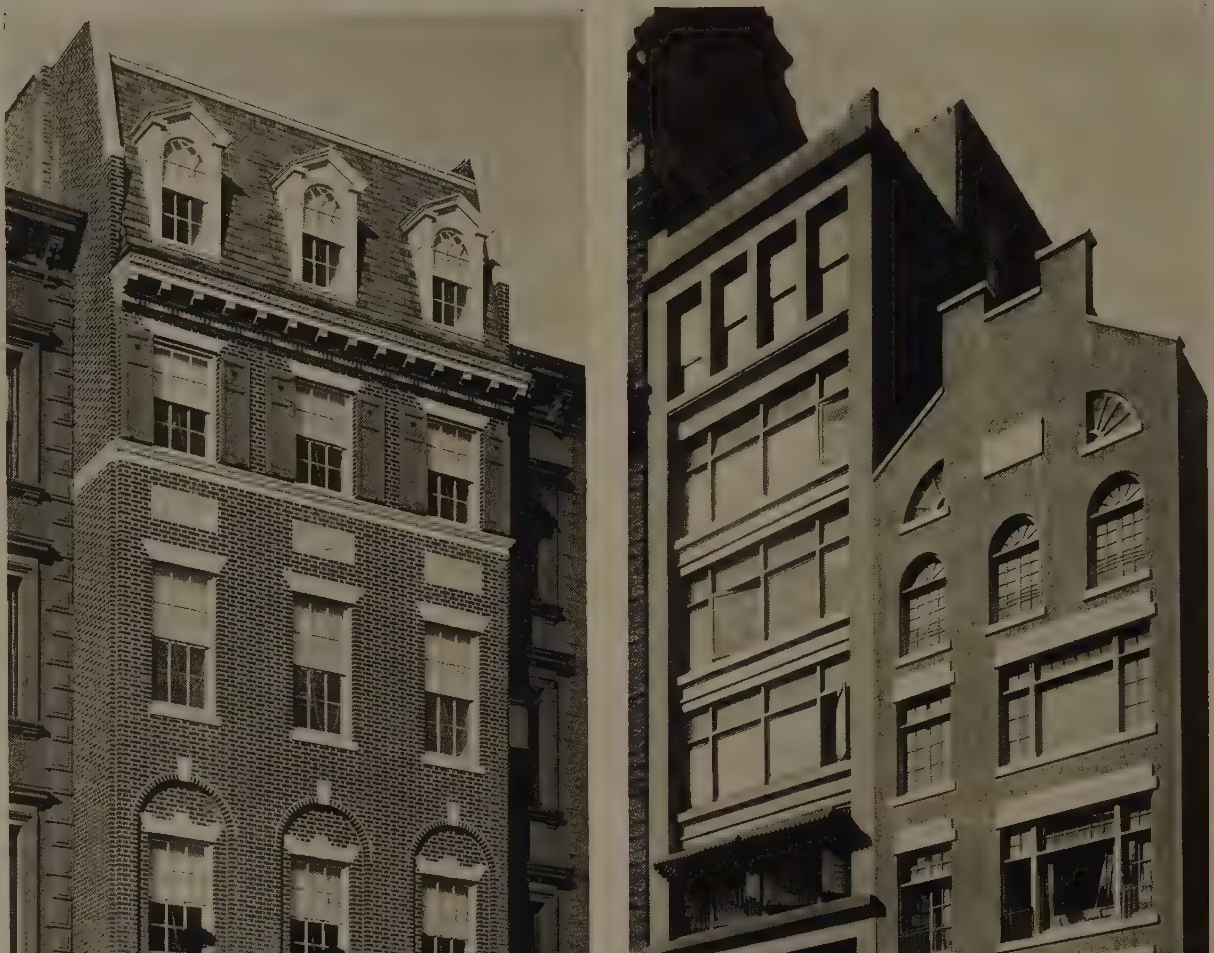
Under this system accounts should be rendered monthly, each statement covering a payment on account of the fee, and reimbursement of costs incurred during the previous month. The various items of cost offer no problems. Payments on account of the fee need to be predetermined.

Having settled the fee, it is well for the sense of security of the owner to set aside a sum, reasonably about 20 per cent. of the fee, to be paid on the issuance of the final certificate. The balance of the fee should reasonably be paid in monthly installments during the progress of the work.

Under the percentage system it has been customary to make a first payment of 20 per cent. of the estimated commission on completion of preliminary studies, 40 per cent. on completion of working drawings, and the balance as certificates are issued, which is generally monthly. These payments are related to the progress of draughting and, while customary under the percentage system, have no logical basis that warrants their adoption under the "Fee-Plus-Cost" System. The draughting charges, like all other charges for current expenses, are reasonably chargeable monthly as they occur; the professional fee, which represents the continuous personal service of the architect, is likewise reasonably chargeable in monthly installments as the service is rendered. If a large proportion of the service is rendered at the beginning of the undertaking, these monthly payments, aggregating 80 per cent. of the fee, may be completed when the building is perhaps half done, no further payments on the fee being made until the final 20 per cent. is paid on issuance of final certificate. If, however, the personal service continues fairly steadily throughout the work, then a larger number of smaller payments would be arranged. For instance, suppose a $50,000 residence: a professional fee of $2,000. Duration of the work from date of agreement to final certificate estimated at eighteen months. Retained for payment on issuance of final certificate, $400. Balance, $1,600, paid in sixteen monthly payments of $100, or perhaps ten monthly payments of $160, as conditions might warrant.

Rendering monthly charges against the fee in this way is advantageous to the architect, in that it gives him a steadier income. It is acceptable to the owner, since it creates a definite monthly item of expense that is expected in connection with the other monthly expenses.

(Continued page 135)



Elliman Building, 414 Madison Ave., New York. Cross & Cross, Architects.

Bradford House (right) 19 East 48th St., New York. David Scott, Architect.

TWO ATTRACTIVE SMALL BUSINESS BUILDINGS.

(Continued from page 133)

SUMMARY

To summarize the arguments in favor of the Fee-Plus-Cost System, it might be said:

(1.) The architect's professional compensation is made independent of the cost of the work.

(2.) The architect's profit is based directly on the intensity and duration of his personal service and the responsibility involved.

(3.) It is guaranteed and can therefore reasonably be reduced to a minimum that is proper in each case.

(4.) All costs involved in a building project are paid for by the owner of that particular piece of work and are not in some cases compensated for by excessive payments by other owners.

(5.) Excessive draughting required by an owner is paid for by the owner and does not operate to reduce the architect's profit. Also an architect is not tempted to curtail desirable draughting in order to increase his profit.

(6.) While all costs are charged to the owner under this system there are only two elements of cost that are not charged in the same way under the percentage system, i. e., draughting and over-head costs.

(7.) Payments of costs and a portion of the fee each month makes easier the financial burden of the architect in running his office.

Legal Decisions of Interest to the Architect

These decisions appear monthly and are edited by Mr. John Simpson, the well-known lawyer.

CONTRACT FOR ARCHITECT'S SERVICES.

Architects made an oral agreement "to compel certain contractors" to construct a building in accordance with certain plans and specifications and were empowered to accept the work and order payment. Before the work was completed they ordered payment of the contract price. In an action for payment for their services of supervision the Indiana Appellate Court held that their liability on a counterclaim was only the amount so wrongfully paid, not exceeding the amount required to complete the building, and they were not liable for failure to complete it. It was for the owner to pursue the contractor to recover for such failure—Bump *vs.* McGrannahan, (Ind.) 111 N. E. 640.

EXPERT EVIDENCE AS TO MATERIAL CHANGE ON CONTRACT.

In an action on a surety bond the chief question was whether the construction of a porte-cochere involved a material change in the plans of the building, so as to discharge the surety. It was held that the question was one which could be explained to and understood by a jury of average intelligence, and the trial court did not err in refusing to permit architects to express their opinions as experts.—Hinton *vs.* Stanton, Arkansas Supreme Court, 183 S. W. 765.

EXCESS PAYMENTS ON ARCHITECT'S CERTIFICATE, WHEN NOT DISCHARGE OF SURETY.

A building contract provided that progress payments on the contract price were to be made from time to time on certificates from the architect on a basis of 85 per cent. of the estimated value of the work done, the final payment to be held until 15 days after completion. Payments were made by the owner only on certificates of the architect which the contract required her to accept and honor, but through honest overestimates by the architect, such payments were in excess of 85 per cent. and therefore partially impaired the reserve fund so provided for. In an action by the owner on the contractor's surety bond, it was held that the surety was not discharged by such payments, since under the provisions of the contract that payments were to be made on the architect's estimates, which could necessarily be nothing but approximations, the parties were bound by any overvaluation which the architect might honestly make. The architect issued certificates from time to time upon the representations of the contractor that all labor and material bills had been paid, but it ultimately developed that there were unpaid bills to an amount largely in excess of the balance of the contract price. It was held that the architect was not so negligent in failing to inform himself as to the payment of labor and material bills as to work a discharge of the contractor's surety, since the contract did not require the architect to demand receipted bills from the contractor nor to take any unusual precautions to guard against unpaid bills or liens. It was not negligence on the owner's part to make such progress payments upon such certificates without any investigation, since she was entitled to the protection of the bond, and could make payments in conformity with the contract without making inquiry on her own motion.—Barton *vs.* Title Guaranty and Surety Co. (Mo.) 183 S. W. 694.

COST OF MODIFIED PLANS.

In an action by an architect for his services in preparing various sets of plans for the erection of a building the testimony of the two chief witnesses, the plaintiff and the defendant, differed radically as to the oral agreements made between them with reference to the several plans. Repeated plans, four sets in all, appeared to have been drawn at the request of the defendant so as to bring the cost within the means at his disposal. It was therefore held that the defendant was liable for the cost of all the plans, and not merely the cost of the fourth. —Salfield *vs.* Cohn (Cal.) 155 Pac. 1007.

NECESSITY FOR ARCHITECT'S CERTIFICATE.

In an action on a surety bond by an owner for excess necessarily paid out for the completion of the building after the abandonment of the work by the contractor over the contract price, it appeared that the building contract authorized the owner, on three days' notice after the architect had certified the contractor's failure to perform the work, to complete the building and to deduct any expenses incurred from any money then due the contractor, the expense to be certified by the architect. It was held that the owner could not hold the contractor and his sureties liable for expenses incurred which were not certified by the architect.—Joblin *vs.* Illinois Surety Co. (Mo.) 182 S. W. 143.

TRIVIAL VIOLATIONS OF BUILDING LINE RESTRICTIONS.

Violations of a building line covenant by an inch or two are, it is held, too trivial for aid in equity. A deed provided that the building on the granted premises should be at least two feet from the north line, and should not be longer than 68 feet, the surface of the lot not to be raised more than two and one-half feet. The space of two feet from the line was concreted, an areaway being put in to light the basement, while a wall built from the house to the rear of the lot was intended to protect the property. It was held that the covenants were not violated. The erection of a dwelling with bay windows extending eight or nine inches over the line was a violation of the covenant, the windows being a part of the building. But, while a grantor is entitled to the aid of equity to prevent his grantee from violating restrictive covenants, yet it was held that after completion of the building a mandatory injunction will not be issued to compel removal of bay windows extending less than a foot beyond a building line, for such a remedy would be too drastic. —Forsee *vs.* Jackson (Mo.) 182 S. W. 783.

NECESSITY FOR ARCHITECT'S CERTIFICATE.

A building contract provided that, in case of the contractor's failure to supply a sufficiency of skilled workmen and materials certified to by the architect, the owner upon three days' written notice to the contractor might provide such labor or materials and deduct the cost from any amount coming due the contractor, and that in case of such failure, and in case a certificate was given by the architect that such failure was a sufficient ground for the termination of the contract by the owner, the owner might take possession of the materials, tools, and appliances on the job. In an action by the contractor against the owner for damages for the wrongful detention of certain tools and appliances used in the construction of the building, the New York Appellate Division holds that, where no certificate was given by the architect that the neglect or failure of the contractor to furnish workmen or materials was sufficient ground for terminating the contract, defendant had no right to take possession of materials, tools, and appliances belonging to the contractor.

ESTIMATED COST EXCEEDING MUNICIPAL APPROPRIATIONS.

Plaintiff architects were employed by the president of the borough of Brooklyn to prepare plans and specifications and estimates for a public building, the contract providing that, if the plans were not satisfactory to the president, plaintiffs should revise them to meet his requirement, and "so that the estimated cost, including architects' fees and cost of survey and inspection, shall be well within the total appropriation." The plans were made with the cost estimated at $3,300,000, and were approved by the president and the municipal arts commission. The only appropriation in existence was one for $500,000 "to provide means for the erection of a new municipal building for the borough of Brooklyn." It was held that, as the cost limitation must be construed as referring to an existing appropriation, plaintiffs could not recover the contract price of the plans, since they had failed to comply with the estimated cost provision of the contract.

Such a contract cannot be construed as limiting the operation of the estimated cost provision to a revision to meet the requirement of the president, and not as applicable where the original plans were approved, since the cost limitation was binding on the president, and he had no power to waive or change the requirement that it be within the appropriation. The fact that the building contemplated could obviously not be built within existing appropriation, and that the parties were therefore justified in proceeding upon the assumption that further sums were to be appropriated, cannot affect the contract obligations, since it is not the province of the courts to change ill-advised contracts. The further agreement of the borough president to pay plaintiffs for completing detailed plans and for supervision an amount equal to 1¼ per cent. of the total estimated cost of such building was invalid, since the president had no power to contract for such services until there was an appropriation for the building which was the subject of such plans.—Lord *vs.* City of New York, 157 N. Y. Supp. 127.

PAYMENT TO MATERIAL MAN OUT OF PAYMENT ON ESTIMATES MUST BE APPLIED ON OWNER'S JOB.

The owners of a building being constructed by a principal contractor made him a large payment on estimates. Part of this he paid over to a materialman who had unpaid accounts against the contractor for material furnished the building in question and also for material that had gone into other jobs. The contractor being silent as to the appropriation of the payment, the materialman applied the money to material furnished the contractor for another building thereby probably losing a lien thereon. In an action to foreclose a mechanics' lien the Iowa Supreme Court held that the materialman could not apply the payment to jobs other than the owner's, regardless of whether he knew what fund the money came from.—Sioux City Foundry & Mfg. Co. *vs.* Merten (Iowa) 156 N. W. 367.

VOID MUNICIPAL ORDINANCE RESTRICTING BUILDING.

The Wisconsin Supreme Court holds that a provision of a municipal code, prohibiting the building, remodeling, or maintenance of garages, livery stables, etc., without the written consent of all real estate owners within 300 feet of the space occupied by the business proposed to be maintained, is invalid, as delegating to private individuals the legislative power vested in the city council to determine whether such structures might be maintained; property owners thus being allowed, at their caprice to refuse to allow adjoining owners to devote their lands to such purposes.—State *vs.* Harper (Wis.) 156 N. W. 941.

LIQUIDATED DAMAGES FOR DELAY.

A building contractor entered into a written contract with a bank to tear down its old building and to erect a new two-story building, which should be completed by August 15, 1912, and to pay the owner $10 a day as liquidated damages for delay in completion. The bank's quarters on the lower floor were not completed and accepted until December 15th, and the upper floor later. During the delay the damages to the bank were indeterminate and difficult of ascertainment, though it was shown that the sum stipulated as damages bore a fair proportion to the damages discussed and manifestly contemplated by the parties in case of delay, and to the damages sustained. The Arkansas Supreme Court held that the stipulation was one for liquidated damages, and not for a penalty.—Nevada County Bank *vs.* Sullivan (Ark.) 183 S. W. 169.

The parties to a contract for the erection of a hotel inserted a stipulation for payment of $100 per day for delay, which provision was stated to be one for liquidated damages and not one for a penalty. There were several store buildings in the hotel which it was intended to rent, and the owner incurred large expenses before completion in anticipation of the operation of the hotel. The Arkansas Supreme Court, in an action for the contract price, held that in view of the determination of the parties that the contract was for the construction of a very large building to be used for other purposes than for rental, where special damages might easily be expected from delay in occupancy, and such damages being difficult of measurement, the provision should be construed as one for liquidated damages and not for penalty.—Pine Bluff Hotel Co. *vs.* Monk & Ritchie (Ark.) 183 S. W. 761.

INJURY TO SERVANT OF INDEPENDENT CONTRACTOR.

An Indiana statute of 1914 provides that every employer or person conducting certain classes of business is, for the purposes of the act, conducting a dangerous occupation and subject to the act, and it designates certain precautions which shall be observed by all owners, contractors, sub-contractors, etc., engaged in any such business. An employee of an independent contractor employed to construct and repair a building, the owner having no control over the work, was injured by the breaking of a scaffold, and sued the owner. The Indiana Supreme Court held that the owner was not liable, as the statute does not abrogate the common law rule, exempting the owner from liability for the negligence of an independent contractor.—Switow *vs.* McDougal (Ind.) 111 N. E. 3.

ARCHITECTVRE

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Editorial

Acoustics—Popular Ignorance Regarding the Profession of Architecture—The Circular of Information, Iowa Chapter A. I. A.—Fixed Prices

ACOUSTICS have become year by year a more and more insistent and desperate problem for American architects. This has been caused in part by the greater use of fireproof construction, in part by a more generous scale in interior design. It is especially noticeable in church architecture. Churches and cathedrals are now being built on truly European scales and in solid masonry, but with insistence by both the clergy and the congregation on the importance of the spoken service and on acoustical conditions familiar here in the small and often crowded churches of thirty or forty years ago, but wholly unknown in the larger churches of Europe.

For several years acoustical defects have been overcome by methods which were at best remedial in character. The success of the Montclair First Congregational Church, illustrated in this issue, shows that these difficulties may be anticipated in the initial design and provided against, and, best of all, that this can be done in the highest type of construction, a solid masonry, new in acoustical quality but unchanged in appearance, an integral part of the structure, and a finished surface. It is another illustration of the fact that ultimately all purposes, even the most subtle, will find themselves sincerely consistent with good architecture.

The masonry, which in Timbrel vault construction forms the groined arches of the ceiling of this church and is carried in random laid courses of large blocks to the floor, is so absorbent for sound as to prevent excessive reverberation and eliminates disturbing echoes. It is, of course, less absorbent than felt but not so far less as to be wholly incomparable with it, while on the other hand it is so much absorbent than wood sheathing, plaster, or other masonry, as to be unique among building materials. It is a happy outcome that from the provisional use of felt, in which material as is now well known the fundamental principles of architectural acoustics have been thoroughly demonstrated, there has been evolved a material which in structural value is at the opposite end of the architectural scale, and which lends itself in its varied forms to monumental buildings. Mr. Goodhue is to be congratulated for demonstrating to the architectural profession a new method of acoustical treatment with a noble material.

THE professions suffer from one very serious handicap which is not felt so severely by business men, namely, the inability of their members to definitely show their wares in a way which the public can understand.

The selection of all professional men is apt to be haphazard; people go to a doctor because he is on the next block, or because he is reported to have a lovely bedside manner, or perhaps because he is reported by people incapable of judging his qualifications, to be skilful in his profession.

The case of the lawyer is not very different; he is generally selected because he is a friend of John Jones "who was in the same fraternity with me at college," or for some reason equally good. Possibly the selection may be made because the person needing a lawyer has heard that some attorney has won a great number of cases, and he goes to that attorney without knowing how strong the cases were to begin with. Yet such a selection, which is probably based on the slightest possible evidence, is better than one which is made for personal reasons.

The selection of an architect is, as a rule, the result of a still wilder guess than those which people make about their lawyers and their physicians. A great many people do not know what an architect is for. They have an idea that they have to engage one to build a house, or a commercial building, but just why, they do not know, and are very apt to look upon an architect as a necessary evil attendant upon house building, as measles is upon childhood. Most people know that an architect makes drawings; some people know that he superintends the job, but very few people know that he assumes no financial responsibility for the cost of the building, or that he does not guarantee the building to be satisfactory, and when these things are explained to the average intending client, he wonders what the architect does do for his money.

The selection of an architect is generally due to one of several reasons: First, because he is a neighbor; second, because he is not the architect who is a neighbor; third, because of some pressure of acquaintance or financial interest which may be brought to bear to secure his appointment; fourth, last and least, because the architect is qualified to execute the work. It is for an increase in the percentage of cases in which the last reason is the compelling one, that architects most do pray. The first two classes offer a fair field to everybody; we all have neighbors, and we have even more people who are not neighbors, but nobody likes to be employed just because he is convenient without regard for his professional attainment. Most members of the profession would prefer that the percentage of employment under the third class should be decreased to 00%, for most of us have confidence enough in our own ability to feel that if we had a fair field and no favor, we would get the job, and the members of the profession are as a rule sufficiently honorable and high minded to wish that the time would come when favoritism or pressure of any kind, would have nothing to do with the appointment of an architect. The only exceptions to this are the conscious incompetents who know that their livelihood depends upon favor and not upon skill; such men are, however, very few in the profession.

Everybody knows that there are a great many men who go into architecture simply because their financial or social connections will ensure them a certain amount of work; one man may be the son of a prominent operator in real estate, and another the son of the president of a large corporation, which makes building loans, and the selection of an architect is too apt to go by favor.

When we consider the fourth class there are certain difficulties attendant upon the selection of an architect. A man is often selected because he has done several buildings in one class of work; he may be known as an architect of banks or of office buildings, or of country houses, and yet the fact that he has done several buildings of one class may not prove at all that he is a competent architect. He may have secured all his previous commissions because of financial or other influence; he may be incapable of good design and ignorant of the principles of construction, yet because he has built a certain number of buildings the presumption is that he is an expert, and other buildings of the same class come to him for that reason.

Fortunately, however, there is something about the profession which takes hold of its practitioners in a way that few other occupants do. After a man has been practicing architecture for a little while he gets to feel that he must produce his best, and he realizes that perhaps his best is not entirely worthy, and that he must have help and assistance from men stronger in design, and stronger in construction than himself. Members of the profession are apt to be both vain and humble, inordinately proud of what they have done, and very humble regarding their competence to handle all sorts of problems. There is probably no profession in which the practitioners seek so constantly for expert advice from one another as in the profession of architecture, and there is probably no profession where expert advice is so lightly regarded by the general public. The attitude of the general public is a very curious one; a man may be a sincere admirer of the ability of his architect, without being in the least willing to defer to the opinions of that architect. It is by no means unusual to have clients insist on the most radical changes of design because they think they know more about design than the architects they employ, and yet these same men may boast of having employed extraordinarily good architects—and believe it—may be perfectly willing to pay a high fee for his employment, but do not realize that advice worth paying for is worth taking. People do not treat lawyers and doctors as they do architects, simply because they are not able to put their fingers on the places in which they might interfere. The average person would hesitate a long time before he told a doctor not to use nitro glycerin for the heart, because it was an explosive, although the same people would refuse to use small panes of glass in the windows because they were English; and yet outside that one small point they might defer to the architect's judgment with complete confidence in his ability to design a reasonable, practical and workable house.

THE Iowa Chapter of the American Institute of Architects has formulated a circular of information and suggestion to persons interested in building operations, which has put many of the difficulties which exist in the selection of an architect, into the clearest and most comprehensible terms. And the paragraphs which would seem to be the most important, not only to the "persons interested in buildnig operations," but also to the architects (if they are not such persons) reads as follows:

"The owner, who is to spend the money, as he does not and cannot know what he is paying, must trust the architect. Therefore he should first of all assure himself that the architect is worthy of his confidence; second, that he is fitted by study of economy in plan, construction, and material to discharge this grave responsibility; in short that he has a right to the professional title."

The last is a very pleasant way of making a very serious point; the architect ought to have the "right" to the professional title, and it is up to the profession as a whole to promote by every possible means the realization of the qualities which alone can give that right.

Later the circular says: "The right kind of professional service can be maintained only by adhering to the established standard of service; payment of adequate charges, based upon what long and wide experience has shown to be fairly remunerative, and methods that insure equitable relations between owner and architect.

"The reverse of this takes the heart out of the labor and invites the temptation to poor, worse still, dishonest service."

The whole pleasure, pride and right of the profession has evidently been felt by the writer of these paragraphs, and what practicing architect is there who does not realize that methods that ensure equitable relations between the owner and the architect must be maintained if his heart is to continue in his labor? A stingy and irritable, a suspicious or a complaining client takes the heart out of the labor, and in a profession which is so notoriously underpaid, and in which good results can be secured only by interest and enthusiasm, the heart must be in the work, and can be kept there only by pleasant and courteous appreciation on the part of the client that the architect is what the Iowa Chapter describes right members of the profession, "Men of the highest integrity, business capacity, and artistic ability, to command respect and confidence as advisors, and to sustain the grave responsibility to the public."

SOMETIME ago we made a suggestion in this column that fixed prices for building materials would be of benefit to the profession. Fiske & Company, manufacturers of tapestry brick, have just sent to architects a circular establishing such a price for all their products. It is unnecessary for us to again point out that if goods are to be specified by brand without alternate, the good faith of the manufacturers is essential, and there is no question that architects would much prefer to specify whatever article is right for one particular job without alternate, providing they are sure that the price will not be raised because of their confidence in that material.

There have been, since this point was first raised in this magazine, a very considerable number of manufacturers who have established these fixed prices, and in cases like this we will continue to publish the names of such manufacturers in the editorial columns with the greatest pleasure, informing the profession on this important point.

LE BRUN TRAVELLING SCHOLARSHIP PRELIMINARY NOTICE.

THE third bi-annual competition for the Le Brun Travelling Scholarship, founded by Pierre L. LeBrun, will be held in the summer of 1916. It is open to any architect, a citizen and resident of the United States, between twenty-three and thirty years of age, and who is not, nor has been the beneficiary of any other travelling scholarship, and who has had at least three years' experience as draughtsman or practicing architect. The amount is $1,000, the period of the scholarship not less than six months.

Each competitor must be nominated by a member of the New York Chapter, A. I. A. who shall certify in writing that the above conditions are fulfilled by the nominee and that in his opinion the nominee is deserving of the scholarship.

All persons who are eligible and desire to compete are requested to send their application to the undersigned before July 15th, 1916. Applications must be accompanied by a statement of residence, citizenship, age, experience and general qualifications and by the necessary nomination and certification from a member of the New York Chapter, A. I. A. Those not having the acquaintance of a member of the Chapter may avail themselves of the services of any well known architect who can vouch for them to a member of the New York Chapter, with whom he is acquainted.

Architects throughout the country are requested to bring this notice to the attention of their eligible draftsmen.

Bertram G. Goodhue,
2 West 47th Street, New York City.
Chairman, Committee on Le Brun Travelling Scholarship.

NEW YORK SOCIETY OF ARCHITECTS ELECTION.

AT the annual meeting of the New York Society of Architects, held at the United Engineering Building, James Riely Gordon of New York was elected president; Adam E. Fisher, of Brooklyn, first vice-president; Edward W. Loth, of Troy, N. Y., second vice-president; William T. Towner, of New York, secretary; Oscar Lowinson, treasurer; Ed. Wehrlin, of New York, financial secretary.

Nearly two hundred members have been elected within the last year.

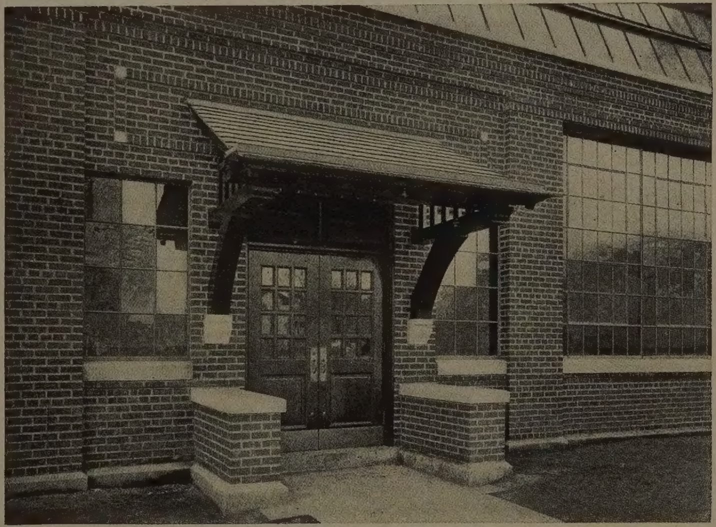
AN OPEN LETTER TO ARCHITECTS.

THIS letter is addressed to architects in any city in the United States where building operations are of sufficient magnitude throughout the year to justify a partnership such as is contemplated, and to those who are desirous of obtaining the co-operation of a man of mature judgment, yet one who is still in his prime, with all the vim and energy of a man in his twenties. The experience gained through contact with men of many minds has made the writer adaptable and pliable rather than set or self-centered. He carried on a successful practice in architecture for about ten years, or until unfavorable climatic conditions brought on a general breakdown in health and a complete change was imperative. Now, having fully recovered, he is desirous of taking up the work by entering the office of an architect or construction engineer as associate on salary basis or partner. As to qualifications, integrity and references, he prefers to offer these in a personal letter or interview to those interested.

He realizes, as many architects do, that double the business is secured and more effectively carried on when the right combination of minds and dispositions are joined under one working unit; he therefore inserts this letter, with the hope of attracting the attention of one who is earnestly desirous of finding a man qualified to perform any part of the work in the profession, solicit business and adjust disputes, a real active partner in every sense of the word.

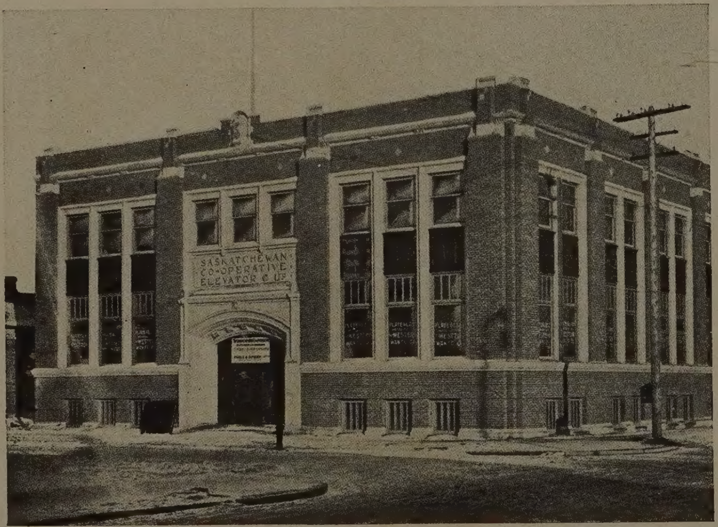
Address,
A.-100—Architecture.

American Architect.



Entrance, Gurney Electric Elevator Co., Honesdale, Pa. Day & Zimmerman, Architects.

American Architect.



Saskatchewan Co-Operative Elevator Co., Regina. Storey & Van Egmond, Architects.

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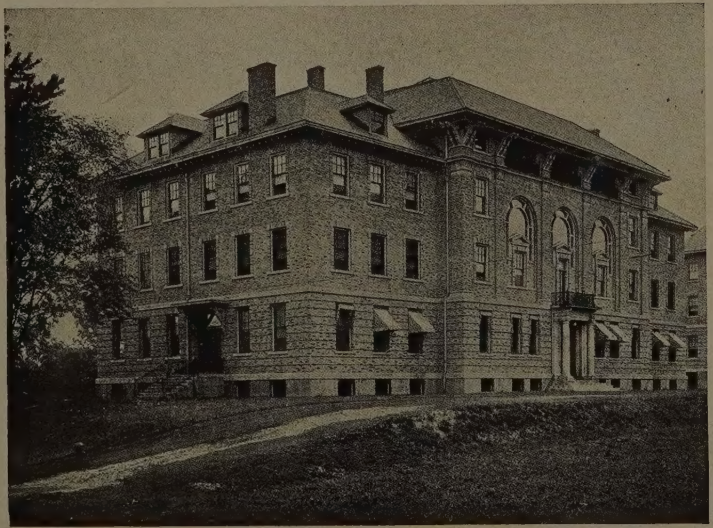
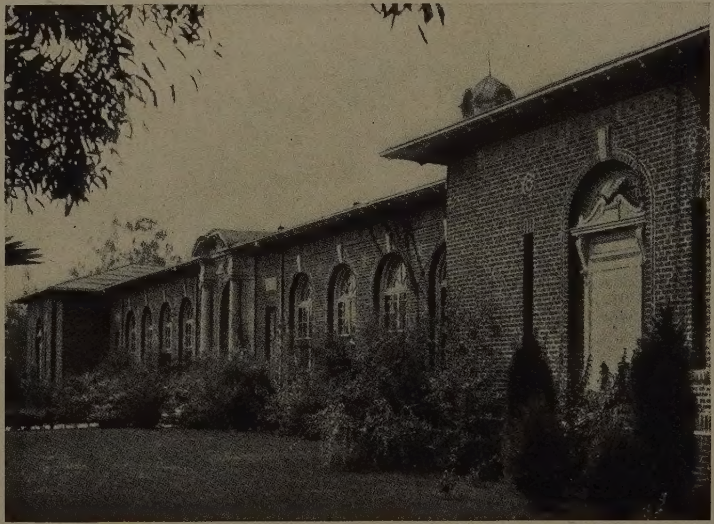


Home Economics Building, Cornell University. Professors Martin, Hebrard and Young, Architects.
Green & Wicks, Supervising Architects.

American Architect.



Grammar School, Artesia, Cal. Withey & Davis, Architects.

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